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Assessing the Regional Socio-Economic Disparities, Evidence from Jordan

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Abstract

Objectives: Regional disparity in development among regions in developing countries is a common issue. Despite being a small, emerging economy, Jordan suffers from this problem. This study aims to identify and explore regional disparities in Jordan between 2010 and 2018 by integrating social and economic factors.

Methods: A mixed-methods approach combining statistical analysis and Geographic Information Systems (GIS) techniques was employed to uncover the economic and social disparities in Jordan, and classify the governorates accordingly**.** This study presents the results of the Lorenz curve and the site quotient and shows the direct interactions between social disparities on economic disparities in Jordan.

Results: The results indicated significant differences between the twelve governorates in Jordan. The capital city, Amman, possesses the highest share of social and economic factors in Jordan and is the only governorate with the highest economic growth. The second and third-ranking governorates in terms of ratios are Irbid and Zarqa.

Conclusions: The study recommends implementing balanced and obligatory regional development plans, utilizing an integrated team of experts, decision-makers, investors, and local representatives. Emphasizing the importance of decentralization and empowering local councils in the governorates is crucial.

Keywords: Socio-economic disparities, GIS, regional development, Jordan.

تقييم التباينات الإقليمية الاجتماعية والاقتصادية: دليل من الأردن

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ملخّص

الأهداف: إن التباين الإقليمي في التنمية بين المناطق في البلدان النامية قضية مشتركة، حيث أن الأردن يعاني من هذه المشكلة رغم أنه يُعَدّ دولة صغيرة ذات اقتصاد ناشئ. تهدف هذه الدراسة إلى تحديد واستكشاف التباينات الإقليمية في الأردن بين عامي 2010 و 2018 بدمج العوامل الاجتماعية والاقتصادية.

المنهجية: تم تطبيق منهجية متعددة الأساليب تجمع بين التحليل الإحصائي وتقنيات نظم المعلومات الجغرافية من أجل استكشاف التناقضات الاقتصادية والاجتماعية في الأردن، ثم تصنيف المحافظات بناءً على ذلك. تستخدم هذه الدراسة نتائج منحنى لورنز وحاصل الموقع، وتظهر التفاعلات المباشرة للتباين الاجتماعي على التباين الاقتصادي في الأردن.

النتائج: أشارت النتائج إلى وجود تفاوتات كبيرة بين المحافظات الاثنتي عشرة في الأردن؛ حيث تمتلك محافظة العاصمة عمان أعلى حصة من العوامل الاجتماعية والاقتصادية في الأردن، وهي المحافظة الوحيدة ذات النمو الاقتصادي الأعلى، المحافظتان الثانية والثالثة من حيث النسب هما: إربد والزرقاء.

الخلاصة: توصي الدراسة بتنفيذ خطط تنمية إقليمية متوازنة وإلزامية؛ بحيث تكون مستمرة وتعتمد على فريق متكامل من الخبراء وصناع القرار ومستثمرين إضافة إلى ممثلين محليين؛ مع الإشارة إلى أهمية تعزيز عملية اللامركزية وتمكين المجالس المحلية في المحافظات.

الكلمات الدالة: التباين الإقليمي، نظم المعلومات الجغرافية، التنمية الإقليمية، الأردن.

1. Introduction

As stated by Fields (2001) "Inequality is like an elephant: You can't define it, but you know it when you see it". Many countries suffer from inequality in different life aspects, e.g. economic or social, thus leading to disparities within a region, country, or even among countries (Goschin et al., 2008; Aljaloudi, 2020). Jordan, a middle eastern country, with a population of 10.2 million per capita (DOS, 2020) suffers from regional economic and social disparities (Al-Habees, 2011; Aljaloudi, 2020). However, these disparities, their extent, and possible mitigations are not well studied yet. Moreover, studies usually concentrate on one aspect without attempting to combine different social and economic factors (e.g., Aljaloudi, 2020).

The concept of socio-economic disparity is complex and multi-faceted, wherein several economic and social aspects interact making it difficult to precisely measure the disparity. Accordingly, several indicators and methods have been developed in order to overcome this difficulty (e.g. Lorenz, 1905). However, the interaction between social and economic factors is complicated and considering one side of the socio-economic disparity could result in skewed outcomes, or even mask some of the important factors that lead to such disparities amongst regions and countries as shown in (Figure 1). Thus, it is important to integrate the economic disparity with the social disparity as the latter can influence, and probably deepen, the former. For example, the United Nations presented the Human Development Index (HDI) which represents a synthesis of long-term progress in three fundamental aspects of human development; i.e. long and healthy life (adult population mean years of schooling), access to knowledge (expected years of schooling for children of school-entry age) and a decent standard of living (Gross National Income per capita) and it is measured as a value ranging from 0-1 (UNDP, 2020). Such indices point out the importance of integrating economic and social aspects in the investigation of regional disparities in a country, nonetheless, most researchers focus on a particular aspect regardless of these pronounced connections between social and economic disparities. Thus, this paper aims to integrate social and economic factors to investigate theonal disparitie in Jordan between the years 2010 and 2018 using GIS and statistical techniques.

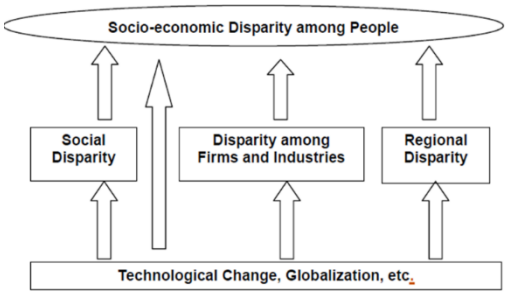

Figure 1 Schematic conceptualization of the factors interactions leading to socio-economic disparity (APEC, 2006).

2. Background Literature Review

Regional planning generally aims to achieve social justice and reduce disparities between the populations. On the other hand, we find many countries, especially countries in the developing world, which are characterized by large regional disparities in economic performance and clear losses in income, education, or health outcomes (Abel, 2019). It also contributes significantly to the promotion of inequality, which is linked to unequal opportunities and lack of use of available resources, affects the economic growth of the state, fuels social and political tensions (Case & Deaton, 2020), (Wilkinson, 2019), and increases the disparities between rural and urban areas (Rodríguez-Pose, 2018), (Kessler,2018), (Muro and Liu, 2016), (Shearer, 2016) and may lead to more divisions and conflicts.

The regional disparities within a country can be mitigated and, to some extent, minimized by implementing sustainable, well-planned, social, and economic development plans. However, as stated in the "Introduction", regional socio-economic disparities require careful investigations of both social and economic factors, their relationships, and interactions.

Kim, S. won^ et al (2019) provides evidence that educational inequalities are wider in higher income countries, creating a serious challenge for developing countries as they expand school access. The study found an overall weak relation between SES and academic outcomes. While Upreti, Parash (2015) discusses the factors that affect economic growth in developing countries. The traps include conflicts or wars, rent seeking on natural resources, dependence on only one neighboring country, and lack of the rule of law. Although real per capita GDP growth of developing countries was higher than the world average, they had low levels of socio-economic conditions. It was partly due to weak institutions, low human and physical capital, conflicts, poverty, a low level of productivity, lack of international trade, and heavy reliance on external help. On the other hand, Paprotny, D. (2021) divides countries of the world into 21 developed "benchmark" countries and 156 developing countries. The distance between the benchmark and developing countries is measured using the "time lags" method, applied here to nine indicators covering topics such as the economy, health, education, and the environment. Additionally, Fagbamigbe, A.F., et al. studies rural-urban gaps in child stunting in developing countries such as Bangladesh and Ethiopia. Studies have suggested that the recent trend of urbanization across developing countries could have gradually worn off and turn around the rural-urban gaps and create greater nutritional.).

3. Study Problem &Questions

Jordan represents an emerging economy (EE), a country that is emerging into a road of economic growth (The World Bank, 2020). In 1986, Jordan was subdivided into 12 official governorates (Figure 2), and accordingly, Jordan has been focusing, since the late 1980s, on regional development plans in order to minimize the regional disparities in the country (Qutieshat, 2013; Aljaloudi, 2020).

Generally, regional disparities in Jordan are primarily the result of the unequal distribution of natural and human resources (Aljaloudi, 2020), that affect the different aspects of development and their respective rates. Despite the fact that the relationship between social and economic factors and disparities are well documented in the literature, several studies have focused on investigating economic and social disparities as separate and concluded results of each without connecting the interactions between the two (e.g. Niyimbanira, 2018; Aljaloudi, 2020).

Figure 2 Location of Jordan and the official governorates.

From an economic point of view, industrial concentration is a proxy to understand a particular area's industrial amplitude (Brakman et al., 2001), which is related to that particular region assets and resources (Mori et al., 2005). One index to evaluate the industrial concentration is the Location Quotient (LQ), a metric index that measures concentration of workers as compared to other regions and it is important in identifying economic disparity (Blair and Carroll, 2009). Another popular and simple indicator of the economic disparity is the Lorenz Curve (Lorenz, 1905). Lorenz Curve fundamentally informs about the wealth distribution amongst the population as it relates the cumulative proportion of population to the cumulative proportion of income in a certain region (Sen, 1997). Thus, combining these two indices, that provide a view of workers concentration and wealth distribution, could provide a better view of the economic disparities within different regions. In Jordan, LQ was implemented by different researchers (e.g. Aljaloudi, 2020). However, as considering only one aspect (e.g., economic) could mask some important factors that contribute to the social and/or

economic disparities, the integration of different factors (economic and social) to aid in the investigation of the spatial and temporal disparities could improve our understanding of the multi-faceted nature of the disparities and ways to develop proper mitigations in Jordan.

The study aims to answer critical questions:

1- Is there a regional variation in Jordan between governorates.?

2- What socio-economic factors examine the regional disparities in Jordan governorates?

3- Are the disparities continued over years?

Depending in previous questions the study assumptions are:

There is a continuous regional disparity between governorates in Jordan.

The socio-economic factors can clarify these disparities.

4. Main Goals

Thus, this study aims to investigate the regional economic and social discrepancies within Jordan based on different economic and social factors for the years 2010 and 2018. The economic factors include: the number of employed citizens, the number of unemployed citizens, the number of the active economic establishments and the household annual average income (e.g. Aljaloudi, 2020), while, the social factors include the number of marriage certificates, the number of divorce certificates and the number of households (representative of population). Accordingly, the originality of this study is reflected in the attempt to shed the light on the social and economic disparities amongst the Jordanian governorates and will attempt to classify these governorates based on their common levels of social and economic development to achieve a spatially distributed disparity pattern to add to any future development plans.

This paper aims to integrate social and economic factors to examine the regional disparities in Jordan between the years 2010 and 2018 between Jordan twelve governorates.

5. Methodology

This research implements a multi-approach method that combines statistical analysis and GIS techniques to investigate the economic and social disparities in Jordan and classify the governorates to aid in any regional future planning.

The selection of the factors reflecting the social and economic disparities is not straight forward and requires a comprehensive understanding of the nature the specific communities. Thus, based on previous studies (Kim, S. won^ et al , 2019),(Parash , 2015) ,(Qutieshat,2013) (Aljalodi , 2020) . In addition to understanding the social and economic structure of the Jordanian community , the factors reflecting the social aspect are number of marriage certificates, number of divorce cases and the number of households. The investigation of marriage and divorce ratios and changes in communities has long been implemented to understand the social structure. In addition, this understanding is directly related to economic structure where it has been proven that income affects the marriage rates and sustainability where marriages are less stable in low income communities (Watson and McLanahan, 2011). This investigation is also supported by investigating the number of households representative of population rate (Aljaloudi, 2020).

For the economic aspect, the factors include: the working population, the unemployed population, number of active economic facilities and the household annual avg. income. The study used data from reliable resources from Jordan general statistics department.

Unemployment population has been suggested to be a crucial factor in dis-equalizing the income distribution in a community (Blinder and Esaki, 1978; Björklund, 1991; Whiteford and van Seventer, 2000) thus understanding the change in unemployment alongside employment and the avg. income could indicate significant economic disparities that are interconnected and related to the previously discussed social factors.

All the factors are presented as percent out of the total (country) percent. The change in each factor is calculated for the years 2010 and 2018 and illustrated using ArcMap 10.3.1 to show the spatial disparity in Jordan. Following to this, the Location Quotient (LQ) was calculated following the equation:

$LQ = (\frac{X}{Y})/(\frac{X'}{Y'})$….. (Blair and Carroll, 2009)

Were, X: provincial employment at time$_0$; Y: provincial employment at time, X': country employment at time$_0$; Y': country employment at time. LQ: the location quotient.

In addition, the Lorenz curve (Lorenz, 1905) was calculated to aid in understanding the economic disparity. The final step in the process is implementing Cluster Analysis Ward's method (Euclidean) by using the combined social and economic factors to further investigate the socio-economic disparities amongst the governorates and to conclude how this discrepancy resulted in either enhanced or reduced economic development in the different regions.

GIS (Geographic Information System) and statistical analysis are powerful tools for measuring socio-economic variation between governorates. They can be used to analyze the key social indicators in a region and identify patterns and trends that might not be immediately apparent (Wang, F. 2015.

2.1Data sources

All the primary data used in this research were obtained from the Department of Statistics in Jordan through the publication of 2010 and 2017/2018.

6. Results and discussion

6.1 *Social and Economic aspects for the years 2010 and 2018*

This study focuses on two aspects of regional disparities in Jordan, the social aspect, and the economical aspect. These two aspects will be discussed in the next sub-sections in detail.

6.2 *The Social aspect of regional disparity*

As previously discussed, social disparity could eventually lead to economic disparity and even deepen the discrepancies between different regions the results fit with previous studies (e.g. Watson and McLanahan, 2011). In this study, the social disparity will be measured using three different social factors that are directly related to the social life of Jordanians, the traditions of the community and background (e.g. Khoury and Massad, 1992).

6.2.1 Social aspect for the year 2010

The social factors data (Table 1 and Figure 3) shows the presence of disparities amongst the Jordanian governorates. The highest percentages of households are present in the capital Amman. However, the second highest percentage of households if for Irbid, followed by Zarqa. Nonetheless, the divorce percentage in Zarqa is second highest despite being third in household percentage. This can be attributed to the social context in the governorate and the higher percentage of mixing of people from different backgrounds. Generally, divorce percentages are higher than marriage percentages in Amman, Zarqa and Aqaba, while lower in the rest of the country. This can also be attributed to the social structure in these governorates and the mixing of populations from different backgrounds.

Table 1 Social factors for the year 2010. Values are percent of total country share.

Region	Marriages 2010	Divorce 2010	Household 2010
Amman	37.84275524	42.73890622	40.7
Balqa	6.690067142	6.092824855	6.7
Zarqa	15.44270372	17.91557904	15
Madaba	2.853140548	2.794932196	2.5
Irbid	18.93828393	15.59814096	17.2
Mafraq	4.677411564	4.023683708	4.2
Jarash	3.067287101	2.546635258	2.7
Ajlun	2.310528604	1.496148214	2.2
Karak	3.614729419	2.260138792	3.7
Tafila	1.175390858	0.757623989	1.4
Ma'an	1.869354501	1.757178328	1.8
Aqaba	1.518347368	2.018208442	2.1
	100	100	100

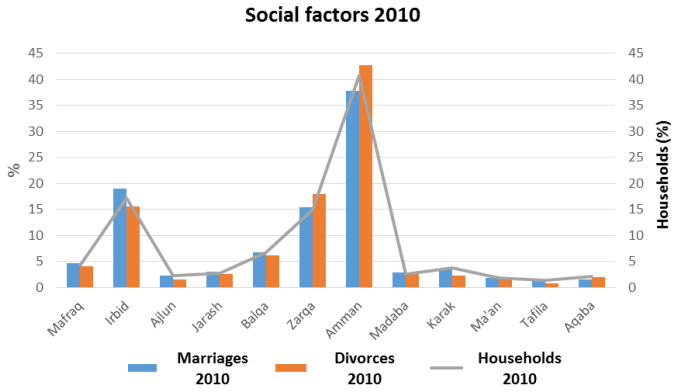

Figure 3 Social factors for the year 2010. Values are percent of total country share.

6.2.2 Social aspect for the year 2018

The social factors data for the year 2018 (Table 2 and Figure 4), like 2010, shows the presence of disparities amongst the Jordanian governorates. The highest percentages of households are present in the capital Amman. However, the second highest percentage of households if for Irbid, followed by Zarqa. Generally, divorce percentages are higher than marriage percentages in Amman, Zarqa, Aqaba and Tafila, while lower in the rest of the country. This can be attributed to the social structure in these governorates and the mixing of populations from different backgrounds.

Table 2 Social factors for the year 2018. Values are percent of total country share.

Region	Marriages 2018	Divorce 2018	Household 2018
Amman	36.79842791	40.95369594	42.1
Balqa	6.253004213	6.642339366	6.3
Zarqa	14.4400147	15.19798807	12.8
Madaba	2.881216954	2.332462153	2.4
Irbid	19.16899935	16.48503378	18
Mafraq	7.135182515	6.085112678	4.8
Jarash	3.179517629	2.263425218	2.8
Ajlun	2.20261826	1.326495389	2
Karak	3.171035146	2.855170373	3.6
Tafila	1.190375209	1.434982001	1.3
Ma'an	1.846353946	1.824547562	1.6
Aqaba	1.733254163	2.598747473	2.2
	100	100	100

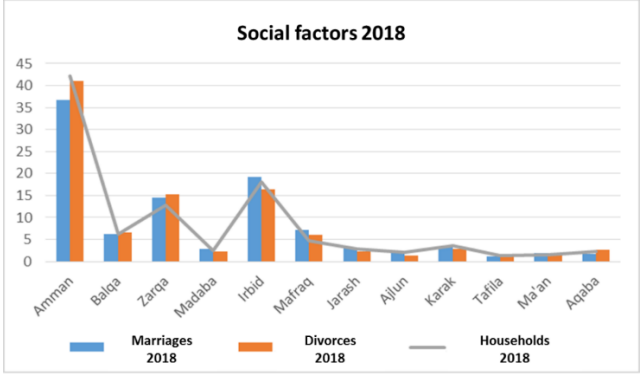

Figure 4 Social factors for the year 2018. Values are percent of total country share.

6.2.3 Social disparity for the years 2010 and 2018

As previously listed, there is a clear discrepancies in the 3 social factors amongst the Jordanian governorates similar to what was observed in previous studies (e.g. Barhoum, 1987). The capital, Amman, has the highest percentage of the total households in Jordan. This is expected as it is the main economic region in Jordan (Aljaloudi, 2020). The second governorate in terms of the households' percentage is Irbid, followed by Zarqa. These two governorates represent different social and institutional structures. Irbid is in northern Jordan, and it is the centre of economic activities in the north, while Zarqa is located near Amman and comprise people from different backgrounds and ethnicities. The concentration of households in these two governorates could be attributed to their economic activity and social structure. These 3 governorates comprise ca. 72.9% of the total households in Jordan for both years under study, while the other 9 governorates only comprise ca. 27.9% (18.3% and 9.6% in the northern and southern governorates, respectively). This shows a clear disparity in population distribution in the country, wherein, especially the southern governorates, houses the lowest percentages out of the total households in Jordan. This discrepancy is also indicated by the marriages and divorces percentages which are affected by several factors, including the number of households, social structure and the population nature and backgrounds. In addition, to understand the temporal disparity, a comparison between the social factors of 2010 and 2018 was performed.

Table 3 and Figure 5 show the temporal change in the social aspect factors. If we look at the household's share, we can see that Amman's percentage share, of the total household, has increased by ca. 1.4%. Three other governorates, namely Irbid, Mafraq and Jarash show a slight increase, of <1%, in household share. In addition to the natural population growth rate, these increases can be attributed to several factors. The increase in Amman could be the result of internal migration to the economic region of the country and probably for the refugee fluxes following the Syrian crises that started in 2011 (Al-Tal and Ghanem, 2019). The slight increase in the share of the other three governorates is most probably the result of the population size increase due to the refugee fluxes since Mafraq and Irbid are located very close to the Syrian borders, and they house several refugee camps. Jarash is also close to the major areas impacted by refugee fluxes, however, with only ca. 0.1% increase it does not indicate any major shift.

The marriages and divorces shares, of the total percentage, also show variable changes within the different governorates. The increase of marriages could also be attributed, to some extent, to the unplanned refugee fluxes and their contribution to these shares (Ghreiz, 2020). This is clearly demonstrated in Mafraq, the most affected governorate by refugees (Al-Tal and Ghanem, 2019; Alhusban et al., 2019), where the marriage percentage share increased by ca. 2.46%. While, in terms of divorce percentages, we can see that the increase in marriages is associated with increased divorces shares. For example, in Mafraq and Irbid. While, other governorates, e.g., Balqa, showed a decrease in marriages associated with increased divorces share. These observations could be attributed to social factors, e.g. young age marriages, and also economic factors (e.g. Barhoum, 1987) . These disparities can be visually illustrated using GIS (Figure 6). The spatial illustration shows that the northern parts of the country, where more progressive economic developments take place and where the refugee fluxes most impacted, are more affected by changes over time. These results agree with previous studies suggesting that the social structure and income in Jordan has a significant influence on marriage and divorce rates and their variability (Khoury and Massad, 1992; Adely, 2016).

Furthermore, to understand any economical discrepancies and disparities, the next part of this paper discusses the economic disparity in Jordan and combines it with the social disparity to explain these discrepancies further.

Table 3 Change in social factors for the years 2010/2018. Values are percent of total country share.

Region	Marriages 2010	Marriages 2018	Change	Divorces 2010	Divorces 2018	Change	Households 2010	Households 2018	Change
Amman	37.84	36.80	-	42.74	40.96	-	40.7	42.1	+
Balqa	6.69	6.25	-	6.09	6.64	+	6.7	6.3	-
Zarqa	15.44	14.44	-	17.92	15.20	-	15	12.8	-
Madaba	2.85	2.88	+	2.79	2.33	-	2.5	2.4	-
Irbid	18.94	19.17	+	15.60	16.49	+	17.2	18	+

Region	Marriages 2010	Marriages 2018	Change	Divorces 2010	Divorces 2018	Change	Households 2010	Households 2018	Change
Mafraq	4.68	7.14	+	4.02	6.08	+	4.2	4.8	+
Jarash	3.01	3.18	+	2.55	2.27	-	2.7	2.8	+
Ajlun	2.31	2.20	-	1.50	1.33	-	2.2	2	-
Karak	3.61	3.17	-	2.26	2.86	+	3.7	3.6	-
Tafila	1.17	1.19	+	0.76	1.43	+	1.4	1.3	-
Ma'an	1.87	1.85	-	1.76	1.82	+	1.8	1.6	-
Aqaba	1.528	1.73	+	2.02	2.60	+	2.1	2.2	+

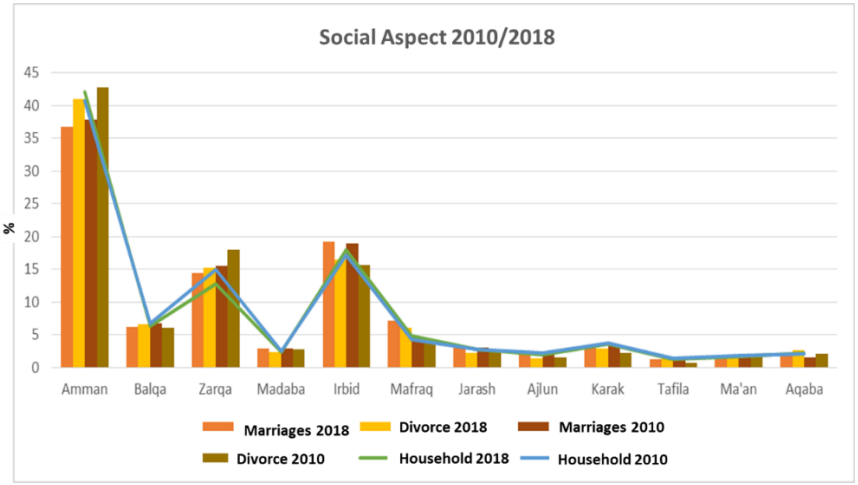

Figure 5 Social factors for the years 2010/2018. Values are percent of total country share.

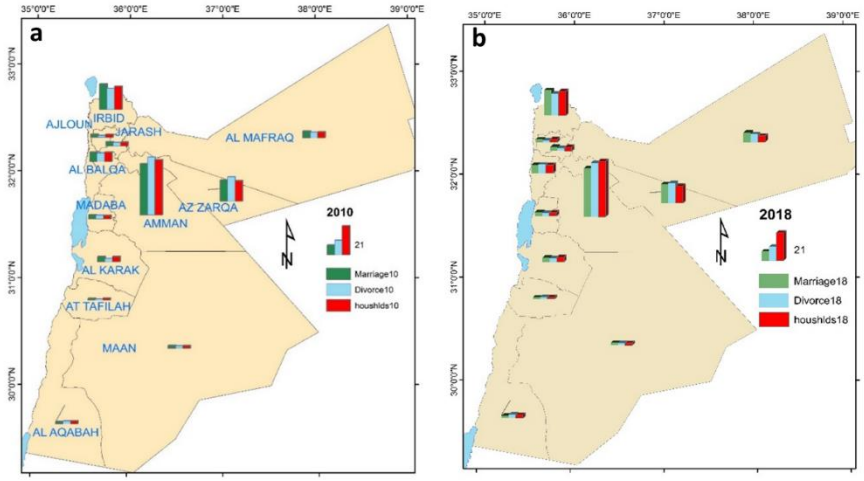

Figure 6 Spatial distribution of the social factors for the years 2010/2018. Values are percent of total country share.

6.3 *The economic aspect of regional disparity*

In the previous part of this paper we discussed the social disparity in Jordan and indicated the presence of high disparities at both spatial and temporal scales, as previously reported by several studies over different periods (e.g. Saymeh and Abu Orabi, 2013; Aljaloudi, 2020). In this part, we focus on the economic disparity in Jordan, its drivers and magnitude prior to discussing the interaction and relationship between both social and economic disparities. Thus, four factors were considered to investigate the spatial and temporal economic disparity patterns for the years 2010 and 2018. (Removed text about the factors since they are already discussed in Methodology)

6.3.1 Economic aspect for the year 2010

Figure 7 and Table 4 show the economic variability amongst the Jordanian governorates for the year 2010. The employment percent shows high positive correlation with the percent of active economic facilities (adj. r^2=0.99, P<0.01). While the regression between employment percent and avg. income percent shows a lower positive covariance (adj. r^2=0.55, P<0.01). These relationships may indicate an independent factor affecting the average income other than employment rate. This is best illustrated in Karak governorate, where relatively low percent of employment population correspond to higher than average of income, compared to the other governorates. This is probably the effect of the natural resources distribution (Aljaloudi, 2020) as in Karak, in southern Jordan, the Potash industry is concentrated which provides higher than average income to the residents. In addition, in Jarash, the avg. household income is relatively higher than Mafraq for example, even though Mafraq has a higher percentage of active economic facilities, which can be attributed to the fact that Jarash is a touristic point in Jordan where more, and better paid, jobs may be available.

Nonetheless, generally, the avg. household income seems to co-vary with the presence of active economic facilities and the percent of employed population. Excluding Karak, the highest avg. household income percentages are for the main two governorates, Amman, and Irbid.

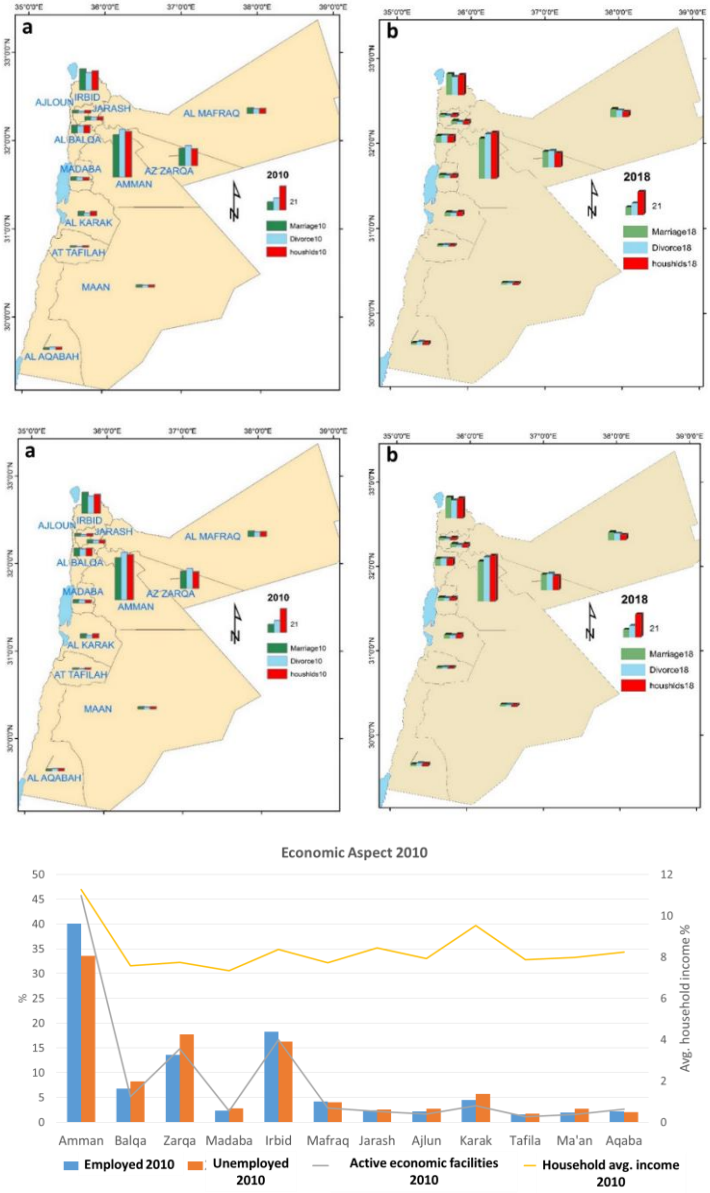

Figure 7 Economic factors for the years 2010. Values are percent of total country share.

Table 4 Figure 8 Economic factors for the years 2010. Values are percent of total country share.

Region	Employed 2010	Unemployed2010	Active economic facilities 2010	Household avg. income
Amman	40.05348027	33.6	45.76408105	11.27385769
Balqa	6.757961267	8.2	5.147125314	7.575324853
Zarqa	13.61315939	17.7	14.80356163	7.747744687
Madaba	2.317478324	2.8	2.269726729	7.338778431
Irbid	18.23190989	16.3	16.67179088	8.363211298
Mafraq	4.173081598	4	2.898498303	7.725236679
Jarash	2.398509035	2.6	2.166036689	8.435725305
Ajlun	2.171623045	2.7	1.644572248	7.931843204
Karak	4.521513654	5.7	3.320492648	9.521418174
Tafila	1.571995786	1.7	1.083319769	7.875785524
Ma'an	1.97714934	2.7	1.589110134	7.977283899
Aqaba	2.2121384	2	2.641684601	8.233790253

6.3.2 Economic aspect for the year 2018

Figure 8 and Table 5 show the economic variability amongst the Jordanian governorates for the year 2018. A general increase in the avg. household income is observed for all the regions. However, like the year 2010, the employment percent shows high positive correlation with the percent of active economic facilities (adj. r^2=0.99, P<0.01). While the regression between employment percent and avg. income percent shows a lower positive covariance (adj. r^2=0.35, P<0.05). These relationships may indicate an independent factor affecting the average income other than employment rate which have persisted through the years. This is again best illustrated in Karak governorate, where relatively low percent of employment population correspond to higher than average of income, compared to the other governorates. This is probably the effect of the natural resources distribution (Aljaloudi, 2020) as in Karak, in southern Jordan, the Potash industry is concentrated which provides higher than average income to the residents. This observation is also apparent in Balqa, where higher avg. household income is higher than Zarqa even though Zarqa has higher percentage of active economic facilities. Generally, the household avg. income does not seem to co-vary with the presence of active economic facilities and the percent of employed population indicating different trend compared to the year 2010.

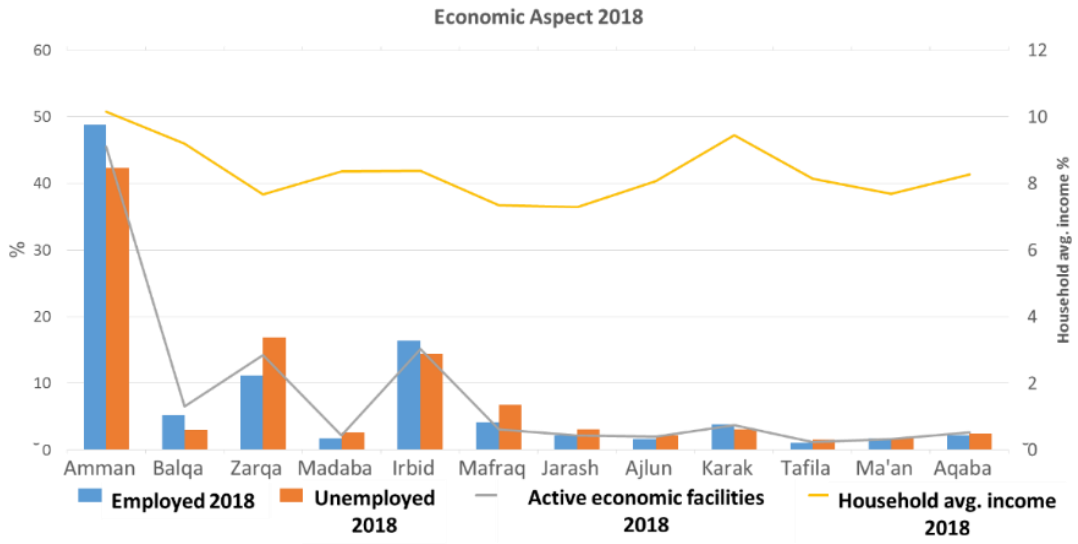

Figure 9 Figure 10 Economic factors for the years 2018. Values are percent of total country share.

Table 5 Figure 11 Economic factors for the years 2018. Values are percent of total country share.

Region	Employed 2018	Unemployed2018	Active economic facilities 2018	Household avg. income
Amman	48.80672269	42.3	45.53852114	10.16224653
Balqa	5.250420168	3	6.560770423	9.193729165
Zarqa	11.15966387	16.9	14.26887315	7.67764582
Madaba	1.687394958	2.6	2.205556785	8.361139836
Irbid	16.36302521	14.4	15.17378791	8.375672013
Mafraq	4.154621849	6.8	3.041288466	7.337303856
Jarash	2.137815126	3.1	2.17068851	7.288247725
Ajlun	1.660504202	2.2	1.973101616	8.069452562
Karak	3.845378151	3.1	3.71928271	9.43812665
Tafila	1.068907563	1.5	1.133495683	8.135770671
Ma'an	1.680672269	1.8	1.591764445	7.688324159
Aqaba	2.18487395	2.4	2.622869161	8.272341013

6.3.3 Economic disparity for the years 2010 and 2018

The spatial economic disparity amongst the Jordanian governorates is present and shows that there are clear economic drivers controlling it (e.g. Saymeh and Abu Orabi, 2013). For example, the presence of natural resources and the administrative strength of the governorate as seen in the Karak and Amman governorates (e.g. Aljaloudi, 2020). However, to see how the economic disparity behaves on a temporal scale, this section provides an estimation of the change in the economic factors for the years 2010/2018. It is worth mentioning that the percentages here represent the region's share of the total (country) percent of the specific economic factor and do not represent the nominal numbers of these factors. These shares show how a specific region's share changes through time, compared to the total, and thus reflecting the effect of regional economic progression/regression.

To illustrate the spatial disparity of the economic aspect, Figure 9 illustrates that higher variability and increased changes are more located in Amman, Irbid and Zarqa and generally in the northern part of Jordan, where most of the economic activity takes place.

Table 6 and Figure 10 show the temporal change in the economic factors. In terms of employed population, all the governorates show a negative change, wherein their share of the total employment decreased, except for Amman which shows an increase of about 8.8% in its share. In accordance with the increase in employability, Amman shows an increase in the unemployed population as percent of the total share. This can be attributed to the total population of Amman which hosts about 40% of the total population of Jordan. For the other governorates, the unemployed population share showed different trends. An increase is noticed for Mafraq, Jerash and Aqaba, while a decrease is indicated for Balqa, Zarqa, Madaba, Irbid, Ajlun, Karak, Tafilah and Ma'an. These changes may not reflect the total unemployed population of a certain region's population; however, they show that the share of unemployed population in these regions decreased out of the country total share, which is influenced by the region's population.

In terms of active economic facilities, a decrease in the share of Amman, Zarqa, Madab, Irbid and Aqaba are indicated, while an increase is noted for the shares of the other governorates. This may reflect the economic plans In Jordan where more regional plans are focusing on distributing the economic facilities in the different governorates and avoid the concentration of these facilities in particular regions. However, this increase in the active economic facilities is not well translated in the household average income as would be expected. Only in Balqa, Ajlun and Tafila we can see this relation, while in the other governorates, the household average income is independent of the increase/decrease of economic facilities. The most significant decrease is indicated for Amman and Jarash (about 1%), while the highest increase of the share is observed in Balqa (about 1.4%). This change may indicate that there is a tendency to minimize the regional disparity of income. Thus, in order to understand this disparity further, LQ and Lorenz Curve were calculated (Lorenz, 1905; Niyimbanira, 2018).

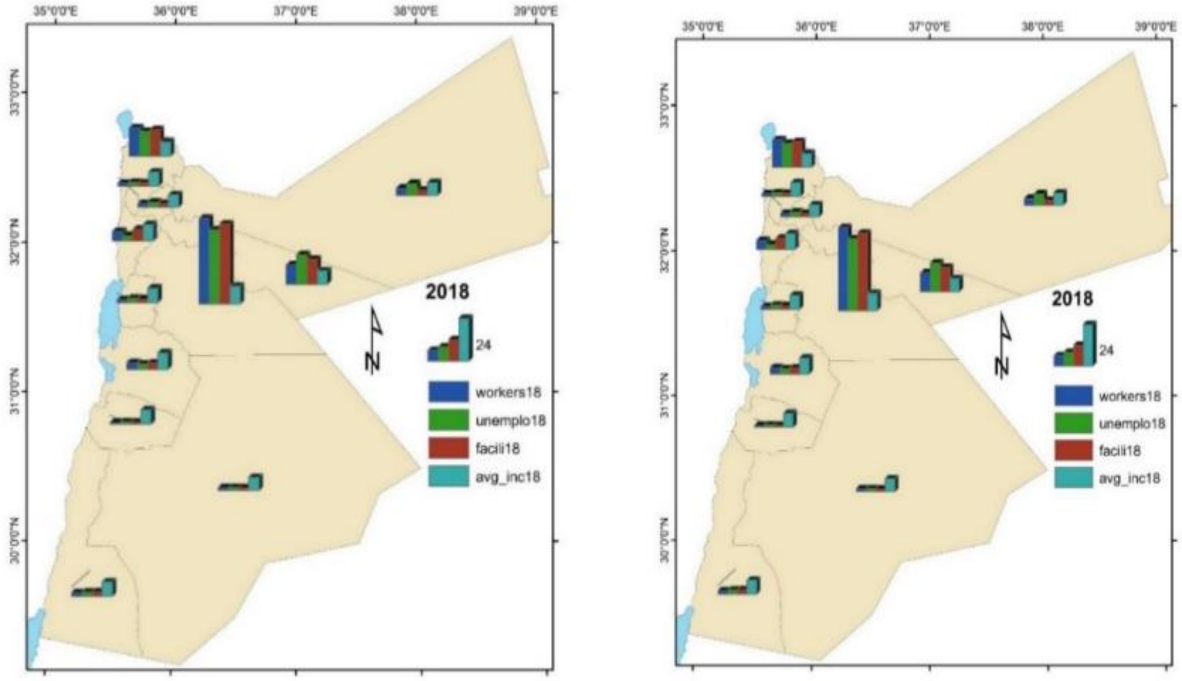

Figure 12 Spatial distribution of the economic factors for the years 2010/2018. Values are percent of total country share

. Table 6 Change in economic factors for the years 2010/2018. Values are percent of total country share.

Region	Employed 2010	Employed 2018	Change	Unemployed 2010	Unemployed 2018	Change
Amman	40.05348027	48.80672269	+	33.6	42.3	+
Balqa	6.757961267	5.250420168	-	8.2	3	-
Zarqa	13.61315939	11.15966387	-	17.7	16.9	-
Madaba	2.317478324	1.687394958	-	2.8	2.6	-
Irbid	18.23190989	16.36302521	-	16.3	14.4	-
Mafraq	4.173081598	4.154621849	-	4	6.8	+
Jarash	2.398509035	2.137815126	-	2.6	3.1	+
Ajlun	2.171623045	1.660504202	-	2.7	2.2	-
Karak	4.521513654	3.845378151	-	5.7	3.1	-
Tafila	1.571995786	1.068907563	-	1.7	1.5	-
Ma'an	1.97714934	1.680672269	-	2.7	1.8	-
Aqaba	2.2121384	2.18487395	-	2	2.4	+
	Active economic facilities 2010	Active economic facilities 2018	Change	Hs_hold avg. inc. 2010	Hs_hold avg. inc. 2018	Change
Amman	45.76408105	45.53852114	-	11.27385769	10.16224653	-
Balqa	5.147125314	6.560770423	+	7.575324853	9.193729165	+
Zarqa	14.80356163	14.26887315	-	7.747744687	7.67764582	-
Madaba	2.269726729	2.205556785	-	7.338778431	8.361139836	+
Irbid	16.67179088	15.17378791	-	8.363211298	8.375672013	+
Mafraq	2.898498303	3.041288466	+	7.725236679	7.337303856	-
Jarash	2.166036689	2.17068851	+	8.435725305	7.288247725	-
Ajlun	1.644572248	1.973101616	+	7.931843204	8.069452562	+
Karak	3.320492648	3.71928271	+	9.521418174	9.43812665	-
Tafila	1.083319769	1.133495683	+	7.875785524	8.135770671	+
Ma'an	1.589110134	1.591764445	+	7.977283899	7.688324159	-
Aqaba	2.641684601	2.622869161	-	8.233790253	8.272341013	+

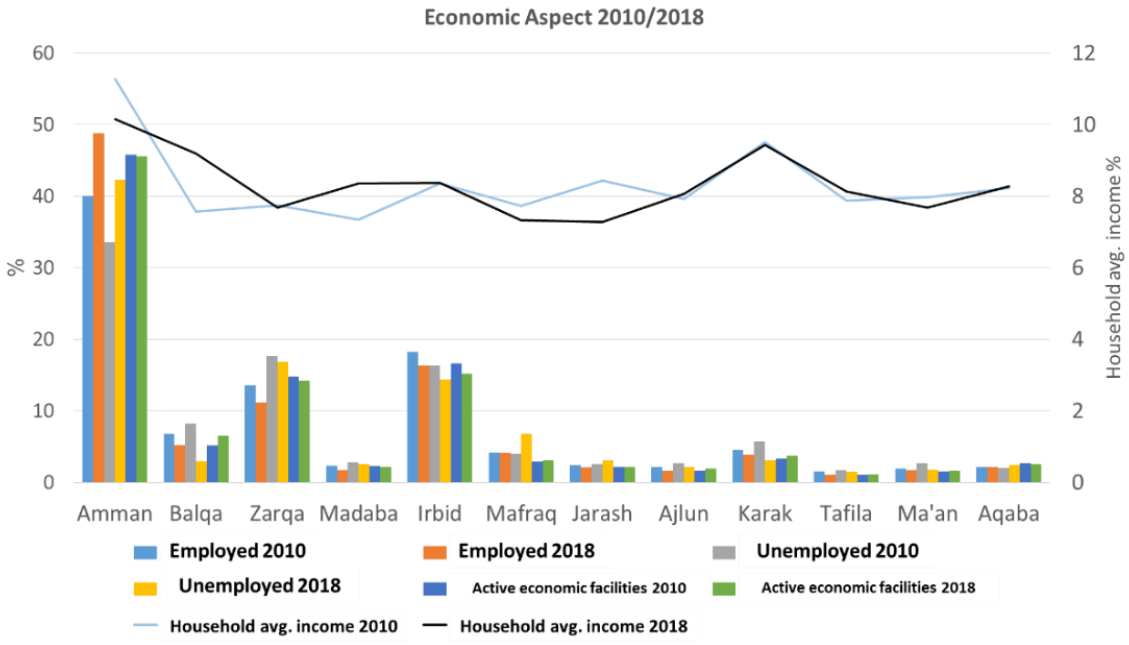

Figure 13 Economic factors for the years 2010/2018. Values are percent of total country share.

Table 7 lists the LQ for the different regions in Jordan and the spatial variability is illustrated in Figure 11. LQ values show the regions' specific economic growth with respect to the country's economic growth, wherein LQ>1 indicates that the region economic growth is faster than the national economic growth and vice versa (Aljaloudi, 2020). The LQ shows that all the regions are progressing at a slower pace compared to the national economic growth except for Amman which shows faster growth. Nonetheless, Mafraq and Aqaba LQ values show that their economic growth is almost equal to the national growth. These observations can be attributed to the fact that Amman is the economic region of Jordan where most of the industries, administrations and facilities are located which could explain the fact that Amman has the highest share of active economic facilities and household avg. income. Even though the change showed a decrease in those aspects for Amman, the overall LQ shows that economic growth in Amman is highest around Jordan. Considering Irbid and Zarqa, the second cities following Amman in their percentages of economic facilities and population size, Irbid shows better economic growth LQ compared to Zarqa. In terms of Mafraq relatively high LQ, this can be attributed to the Syrian refugee fluxes and the economic attention they brought to Mafraq region and the subsequent job opportunities. In supporting of this observation is the Lorenz Curve (Figure 12) which shows that the household avg. income is not equally distributed for the years 2010 and 2018. However, comparing the 2018 and 2010 curves, we can see that Mafraq, Irbid and Madaba moving towards better equality trends, while Zarqa and Balqa are moving in the other direction.

Table 7 Location Quotient (LQ) for the 12 governorates of Jordan for the years 2010/2018.

Region	LQ
Amman	1.22
Balqa	0.78
Zarqa	0.82
Madaba	0.73
Irbid	0.9
Mafraq	0.99
Jarash	0.89

Region	LQ
Ajlun	0.76
Karak	0.85
Tafila	0.68
Ma'an	0.85
Aqaba	0.99

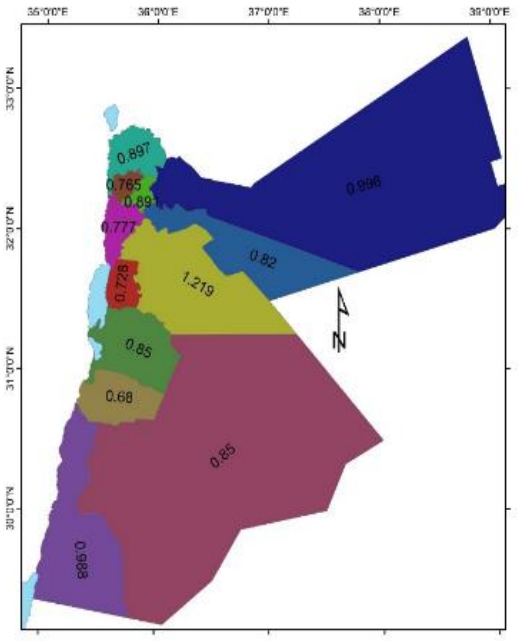

Figure 14LQ spatial distribution in Jordan

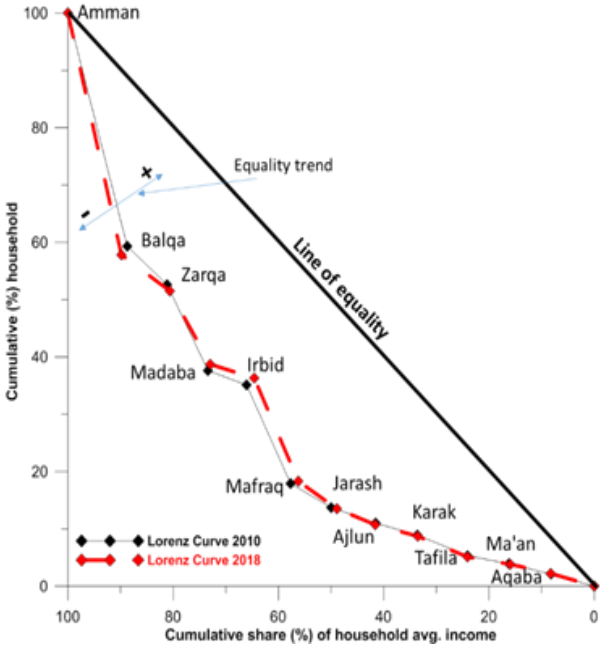

Figure12 Lorenz Curve for the years 2010/2018.

However, these changes in economic factors can be influenced by several economic and social aspects as discussed in the first part of this paper (e.g. Fields, 2001; Qutieshat, 2013; Aljaloudi, 2020). The effect of these economic and social factors combined could aid in understanding the regional disparity in Jordan and facilitate better comprehension of mitigation plans (Niyimbanira, 2018). Thus all these factors were combined and used as a dataset for cluster analysis (e.g. Kronthaler, 2005; Monfort et al., 2013) in an attempt to explain these disparities and provide more insights into the regional development across Jordan. The cluster analysis (Figures 13 and 14) shows that different clusters can be extracted for the years 2010 and 2018.

For the year 2010, 5 associations are observed: association 1 (Amman), 2 (Zarqa and Irbid), 3 (Balqa and Mafraq), 4 (Tafila, Aqaba, Ajlun and Ma'an) and 5 (Madaba, Jarash and Karak). These associations reflect the socio-economic characteristic of the governorates in 2010 and their similarities. As observed, Amman, which was distinguished with respects to the social and economic aspects as previously discussed. The second association includes Zarqa and Irbid, the second major cities in Jordan in terms of population and economic activity. The third association that includes Balqa and Mafraq is different the first two associations as it binds a governorate from the north with another from the centre near Amman. However, as these two governorates are similar in their socio-economic aspects, they show one association. The 4th and 5th associations include governorates from the north and south bound together based on their socio-economic characteristics. For the year 2018, six associations are extracted. The associations 1 (Amman), 2 (Zarqa and Irbid), 3 (Balqa), 4 (Tafila, Aqaba, Ajlun and Ma'an), 5 (Madaba and Jarash) and 6 (Mafraq and Karak). The social and economic factors shows that only slight changes have occurred over the period from 2010 to 2018 in the clustering of the governorates.

Associations 1, 2 and 4 did not change, while Mafraq and Karak moved from their associations in 2010 to form association 6 in 2018. This left association 2 to represent Balqa. These relationships reflect the effect of the social and economic effect on the regional development in Jordan.

Amman, the only region with >1 LQ, that comprises the highest shares of the social and economic factors percentages has kept its sole association showing its distinctive characteristics from the rest of the country. This is explained by the fact that Amman is the economic centre of Jordan and where most of the internal immigration is concentrated. Irbid and Zarqa, the governorates comprising the second highest shares of the social and economic factors, forms a stable association for both years. The lesser developed governorates seem to vary, for example, the changes in Mafraq, Karak and Balqa wherein the development in Balqa allowed it to from a separate association. While possibly the development in Mafraq, following the Syrian refugee fluxes and the consequent economic progression have contributed to bringing Mafraq closer to Karak governorates development level. Interestingly, the southern governorates, Ma'an, Tafila and Aqaba are part of one association for both years, reflecting either their synchronous development or their lack of development. However, changes are more noticeable in the northern governorates where probably higher levels of economic and social development plans take place.

The cluster analysis also highlights the regional socio-economic disparities in Jordan where governorates with better development plans are moving and forming new associations, while others maintained their associations.

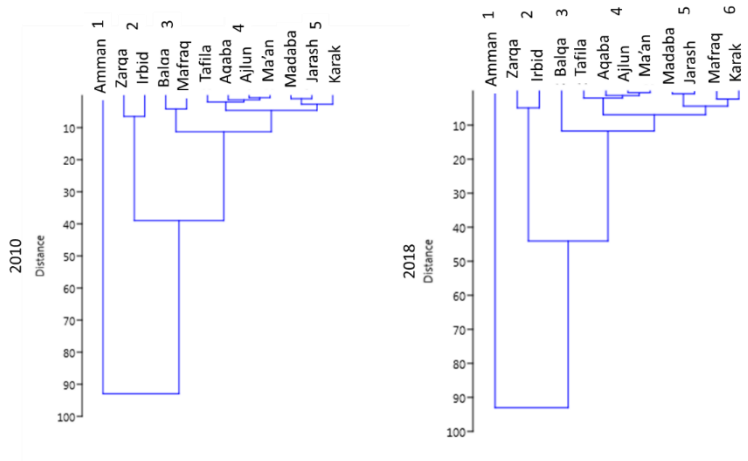

Figure 15 16 also showing the development clusters.

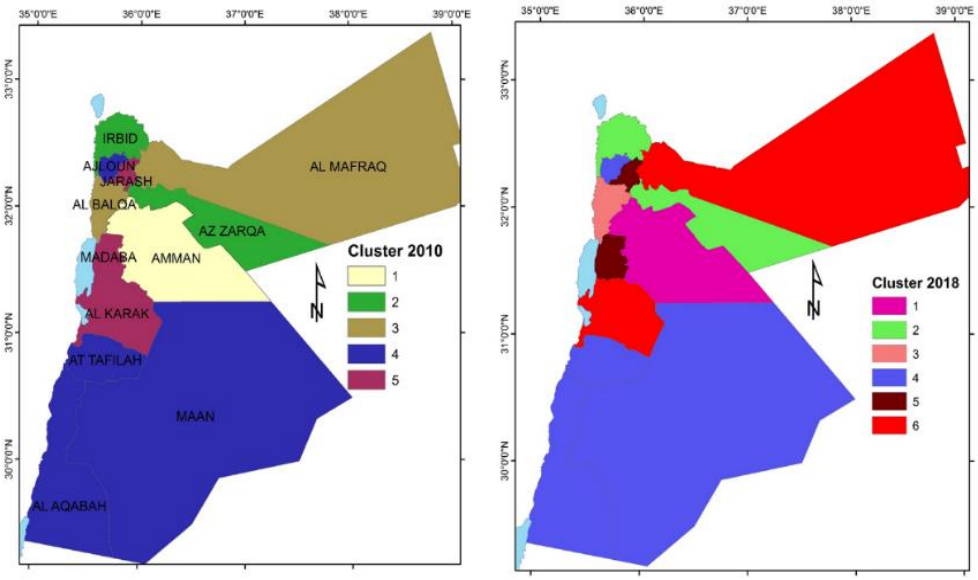

Figure 14 Spatial distribution of the development clusters.

7. Conclusions

The investigation of the social and economic aspects disparities in Jordan for the years 2010 and 2018 indicates high disparities amongst the 12 governorates. The social and economic factors implemented in this study are inter-related and variations in any of them is a result of, or could affect, others. The inclusion of both social and economic factors best reflects the regional development of Jordan and shows clear disparities over space and time. The results show that Amman has the highest shares of the social and economic factors in Jordan and being the country's principal economic and social centre, Amman is the only governorate with higher economic growth compared to the national economic growth. The second and third governorates in terms of percentages shares, Irbid and Zarqa, also show a tendency towards enhanced economic growth, even though their LQ values are <1. The importance of the presence of natural resources is well demonstrated in the characteristics of Karak, where potash industry is concentrated, with higher than household avg. income compared to governorates with higher shares of economic facilities and employment rates. In addition, the effects of refugee fluxes and the consequent social and economic impacts is well demonstrated in Mafraq, the governorate that houses the highest percentage of refugees, where higher than average household percentage is recorded for the year 2018 and the subsequent economic impacts of lower household avg. income of the total share of the country is recorded.

Implementing better development plans is required to ensure equal development across Jordan. In addition, enhancing the decentralization process and empowering the local councils in the governorates to create better development plans tailored for their needs could contribute to better regional development and focusing the regional development plans for a more equal socio-economic development.

The results of this study indicate the importance of considering both social and economic factors in the investigation of the regional disparities in a region. Considering either the social aspect or the economic aspect individually could mask the effects and relationships of the complete socio-economic systems, thus the comprehensive understanding of these aspects is crucial in evaluating the regional disparities, especially in developing countries where development is not well distributed. The study recommends implementing better regional development plans. In addition to enhancing the decentralization process and empowering the local councils in the governorates and Municipalities as well. The re-equilibrium to the urban system of Jordan and enhancement of small and medium cities to fix the urban pyramid. More studies need to be done about variations and the socio-economic factors.

REFERENCES

Abel, J. and R. Deitz. (2019). Why Are Some Places So Much More Unequal Than Others?. *Federal Reserve Bank of New York Economic Policy Review*.

Adely, F. (2016). A different kind of love: compatibility (insijam) and marriage in Jordan. *The Arab Studies Journal* 24, 102–127.

Al-Hanbali, A. & Kondoh, A. (2010). Spatial variation of socio-economic attributes of population at governorate level in Jordan. *Journal of Geography and Regional Planning*, 3(9), 217-228.

Al-Habees, M. (2011). Spatial Development Disparity in Jordan. Jordan *Journal of Social Sceinces* 4, 180–202.

Al-Tal, R.S. & Ghanem, H. (2019). Impact of the Syrian crisis on the socio-spatial transformation of Eastern Amman, Jordan. *Frontiers of Architectural Research* 8, 591–603. doi:https://doi.org/10.1016/j.foar.2019.06.003

Alhusban, A., Alhusban, S., & Al-Betawi, Y. (2019). Assessing the impact of urban Syrian refugees on the urban fabric of Al Mafraq city architecturally and socially. *International Journal of Disaster Resilience in the Built Environment* 10, 99–129.

Aljaloudi, J. (2020). Measuring Regional Economic Growth In Jordan. *SocioEconomic Challenges* 4, 125–130.

APEC, E. C. (2006). *Socio-Economic Disparity in the APEC Region*. Singapore.

Barhoum, M.I. (1987). Divorce and the status of women In Jordan. *International Journal of Sociology of the Family* 17, 121–142.

Björklund, A. (1991). Unemployment and income distribution: time-series evidence from Sweden. *Scandinavian Journal of Economics* 933, 457–65.

Blair, J. P. & Carroll, M. C. (2009). *Local Economic Development: Analysis, Practices, and Globalisation*, 2nd ed. SAGE

Publications, London.

Blinder, A. S. & Esaki, H. Y. (1978). *Macroeconomic activity and income distribution in the postwar United States*. The Review of Economics and Statistics 60, 604–609.

Brakman, S., Garretsen, H., & Marrewijk, C. van. (2001). *An Introduction to Geographical Economics: Trade, Location and Growth*. Cambridge University Press. doi:10.1017/CBO9781139164481

Deaton, A. (2018). Deaths of despair. Lamp, *The*, 75(1), 26

Fagbamigbe, A.F., Kandala, N.B. & Uthman, A.O. (2020). Demystifying the factors associated with rural–urban gaps in severe acute malnutrition among under-five children in low- and middle-income countries: a decomposition analysis. *Sci Rep* 10, 11172 . https://doi.org/10.1038/s41598-020-67570-w

Fields, G.S., 2001. *Distribution and Development: A New Look at the Developing World*. doi:10.7551/mitpress/2465.001.0001

Ghreiz, E. (2020). The Syrian Refugee Crisis in Jordan: Challenges and Future Opportunities for NGOs. In: Beaujouan, J., Rasheed, A. (Eds.), Syrian Crisis, Syrian Refugees: Voices from Jordan and Lebanon. *Springer International Publishing*, Cham, 119–137. doi:10.1007/978-3-030-35016-1_9

Goschin, Z., Constantin, D., Roman, M., & Ileanu, B. (2008). The current state and dynamics of regional disparities in Romania. *Romanian Journal of Regional Science* 2, 80–105.

Kessler, J. (2018). *How the Concentration of Opportunity Elected Trump.* Third Way.

Khoury, S. A. & Massad, D. (1992). Consanguineous marriage in Jordan. *American Journal of Medical Genetics* 43, 769–775. doi:https://doi.org/10.1002/ajmg.1320430502

Kim, S. won, Cho, H., & Kim, L. Y. (2019). Socioeconomic Status and Academic Outcomes in Developing Countries: A Meta-Analysis. *Review of Educational Research*, 89(6), 875–916. https://doi.org/10.3102/0034654319877155

Kronthaler, F. (2005). Economic capability of East German regions: Results of a cluster analysis. Regional Studies 39, 739–750. doi:10.1080/00343400500213630

Lorenz, M. O. (1905). Methods of Measuring the Concentration of Wealth. *Journal of the American Statistical Association* (new series) 70, 209–217.

Monfort, M., Cuestas, J. C., & Ordóñez, J. (2013). R*eal convergence in Europe: A cluster analysis. Economic Modelling* 33, 689–694. doi:https://doi.org/10.1016/j.econmod.2013.05.015

Mori, T., Nikishimi, K., & Smith, T. E. (2005). A divergence statistic of industrial localization. *The Review of Economics and Statistics* 87, 635–651.

Muro, M. & Liu, S. (2016). *Another Clinton-Trump divide: High-output America vs low-output America. The Avenue*

Niyimbanira, F. (2018). Comparative Advantage And Competitiveness Of Main Industries In The North-Eastern Region Of South Africa: Application Of Location Quotient And Shift-Share Techniques. *International Journal of Economics And Finance Studies 10,* Online.

Paprotny, D. (2021). Convergence Between Developed and Developing Countries: A Centennial Perspective. *Soc Indic Res* 153, 193–225. https://doi.org/10.1007/s11205-020-02488-4

Qutieshat, R. (2013). Analysis for Sustainable development in Jordan By GIS. *Geosp online magazine.*

Saymeh, A. & Abu Orabi, M. (2013). The effect of interest rate, inflation rate, gdp, on real economic growth rate in Jordan. *Asian Economic and Financial Review* 3, 341–354.

Sen, A. (1997). *On Economic Inequality.* Clarendon Press, Oxford, UK.

Shearer, C. (2016). *The small town-big city split that elected Donald Trump. The Avenue.*

Upreti, Parash (2015) "Factors Affecting Economic Growth in Developing Countries," *Major Themes in Economics*, 17, 37-54. Available at: https://scholarworks.uni.edu/mtie/vol17/iss1/5

Watson, T. & McLanahan, S. (2011). Marriage Meets the Joneses: Relative Income, Identity, and Marital Status. *The Journal of Human Resources* 46, 482–517.

Wang, F. (2015). *Quantitative methods and socio-economic applications in GIS*. CRC Press.

Whiteford, A. & Seventer, D. van (2000). South Africa's changing income distribution in the 1990s. *Studies in Economics and Econometrics* 243, 7–30.

Wilkinson, W. (2019). The density divide: Urbanization, polarization, and populist backlash. *Niskanen Center Research Paper.*