Convergence and regional multidimensional disparities under the prism of social wellbeing

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Elements of context

- Regional disparities beyond the monetary aspect (Stiglitz, 2015).

- International environment of Well-being in Morocco.

- European influence of well-being (Diener et al., 2009).

- Morocco & Europe cooperation.

    ➢ Dynamics of SWB in Moroccan regions ?

    ➢ Convergence towards a common path of SWB with the European regions?

CONTENT OF THE PRESENTATION

- Data & Method

- Results & Discussion

- Conclusions, recommendations and perspectives

Data & Method

Data

Social Well-Being Index (SWBI) 2000 and 2019 based on :

Theme	Indicator	Unit	International data			Moroccan data		
			Source	Baseline year	Endline year	Source	Baseline year	Endline year
Living conditions	Number of rooms per person	Rooms per person	OECD	2000-2005	2015-2019	HCP	2004	2014
	Share of households with broadband internet access	%	OECD	2010	2019	Authors, Census 2014, Telecom regulatory and World Bank	2006	2017
Health	Rate of active physicians	Per 1000 inhabitants	OECD	2001	2014-2018	Authors, HCP and M. Health	2004	2019
	Infant mortality rate	Deaths under one year old per 1000 live births	OECD	2001	2013-2019	Authors, HCP and M. Health	2004	2015
Gender	Gender gap in activity rate, 15-64 years old (female – male)	Point of %	OECD	2001	2018-2020	Authors and HCP	2004	2019
	Gender gap in the unemployment rate, 15-64 years old (female – male)	Point of %	OECD	2001	2017-2020	Authors and HCP	2004	2016

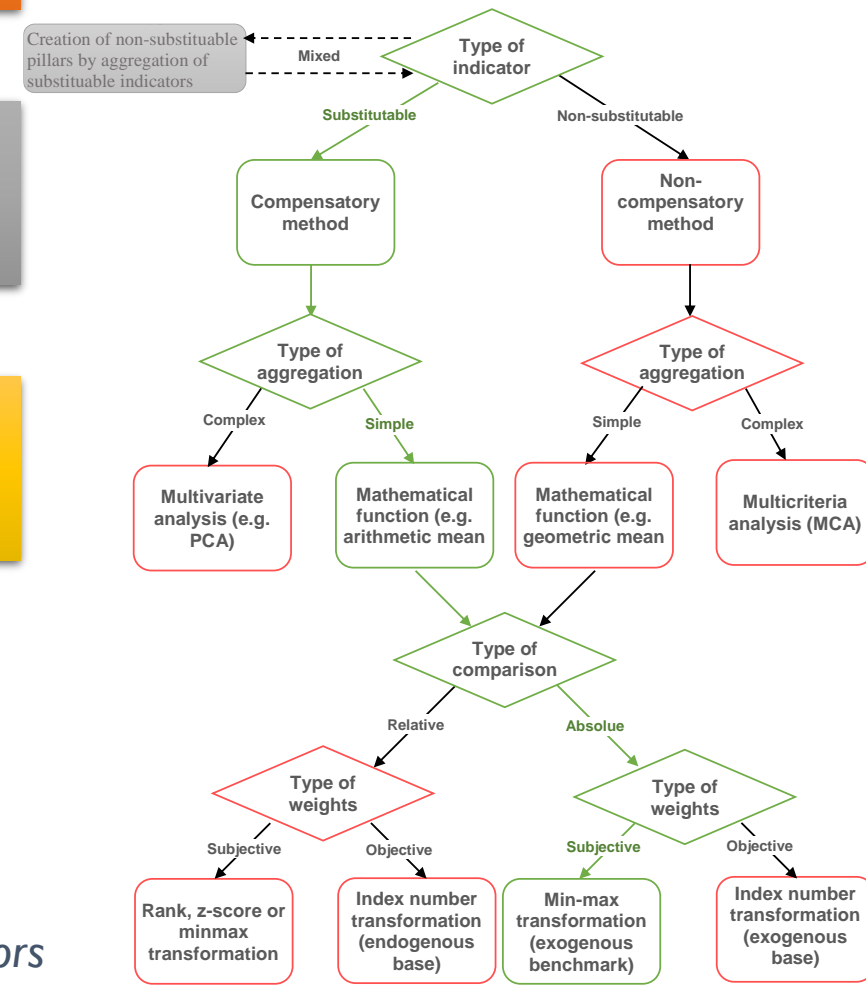## 12 regions of Morocco & 81 territories (TL2) of 34 European countries.

Frequency of use of selected indicators for measuring SWB by theme

Theme	Indicator	(UN, 2016)	(OECD, 2020)	(Eurostat, 2017)	(Istat, 2022)	(New Zealand Government, 2021)	(Australian Bureau of Statistics, 2012)	(Office for National Statistics of UK, 2019)	(Bureau fédéral du Plan Belge, 2021)	(Giesselmann et al., 2013)	(Canadian Index of Wellbeing, 2016)	(Central Statistics Office of Ireland, 2019)	(Hungarian Central Statistical Office, 2020)	(Marguerit et al., 2015)	(Wallace, 2019)	(IWEPS, 2022)
Living conditions	Number of rooms per person	red	yellow	yellow	yellow	yellow	red	red	red	red	red	red	red	red	red	red
	Share of households with broadband internet access (%)	green	green	red	yellow	red	red	red	red	red	red	red	yellow	red	red	red
Health	Rate of active physicians (per 1000 inhabitants)	red	red	red	green	red	red	red	red	red	red	red	red	red	red	red
	Infant mortality rate (<1year / 1000 live births)	green	yellow	red	green	red	red	red	red	red	red	red	red	red	red	red
Gender	Gender gap in activity rate, 15-64 years old (female - male, in %)	red	red	yellow	yellow	red	red	red	red	red	red	red	red	red	red	red
	Gender gap in the unemployment rate, 15-64 years old (female - male, in %)	red	red	yellow	red	red	red	red	red	red	red	red	red	red	red	red

Method : SWB

Score minmax [0 à 100] : 6 indicators / 93 R (Morocco & 34 European countries) (2000 et 2019) (Han et al., 2012; Greco et al., 2020; Koronakos et al., 2020).

Average score for each of the 3 themes for 93 regions (2000 and 2019).

Social Well-Being Index (SWBI): Average of scores of the 3 themes covered for 93 regions (2000 and 2019).

$$P: V_i^N = \frac{V_i - V_{min}}{V_{max} - V_{min}} * (Nmax - Nmin) - Nmin$$

$$N: V_i^N = Nmax - \frac{V_i - V_{max}}{V_{max} - V_{min}} * (Nmax - Nmin)$$

Creation of non-substituable pillars by aggregation of substituable indicators

Mixed

Type of indicator

Substitutable

Non-substitutable

Compensatory method

Non-compensatory method

Type of aggregation

Complex

Simple

Type of aggregation

Simple

Complex

Multivariate analysis (e.g. PCA)

Mathematical function (e.g. arithmetic mean)

Mathematical function (e.g. geometric mean)

Multicriteria analysis (MCA)

Type of comparison

Relative

Absolue

Type of weights

Subjective

Objective

Type of weights

Subjective

Objective

Rank, z-score or minmax transformation

Index number transformation (endogenous base)

Min-max transformation (exogenous benchmark)

Index number transformation (exogenous base)

Source : (Mazziotta & Pareto, 2013) adapted by authors

Method : I-Moran & absolute β-convergence model

- I Moran : $I = \dfrac{N}{\sum_i \sum_j w_{ij}} \dfrac{\sum_i \sum_j w_{ij}\,(y_i - \bar{y})\,(y_j - \bar{y})}{\sum_i (y_i - \bar{y})^2}$

- We adapted the absolute β-convergence model (Barro & Sala-i-Martin, 1990) to the SWBI:

$$\frac{1}{T} \ln\left(\frac{SIWB_{i,2019}}{SIWB_{i,2000}}\right) = \alpha + \beta \ln\left(SIWB_{i,2000}\right) + \varepsilon_i$$

- Taking into account spatial heterogeneity by considering the global spatial model:

$$Y = \rho.WY + X.\beta + WX.\theta + u$$

$$u = \lambda.Wu + \varepsilon$$

Where
W : neighborhood matrices.
β : vector of the coefficients of the exogenous variables ;
ρ : coefficient relating to the endogenous interaction effect ;
θ : vector of dimension K (number of exogenous variables) related to exogenous interaction effects;
λ : spatial correlation coefficient of errors.

Results & Discussion

Results : Center-periphery SWB disparities

- **Center-periphery disparities between Nordic regions & the central German-speaking regions and the rest of Europe.**

Source : Authors

Results : Center-periphery SWB disparities

- **Lowest SWB scores :** Morocco, Turkey and Greece, Slovak Republic, Hungary and Slovenia.

- **Spatial heterogeneity of SWB.**

- **High intensity of inter-country inequalities .**
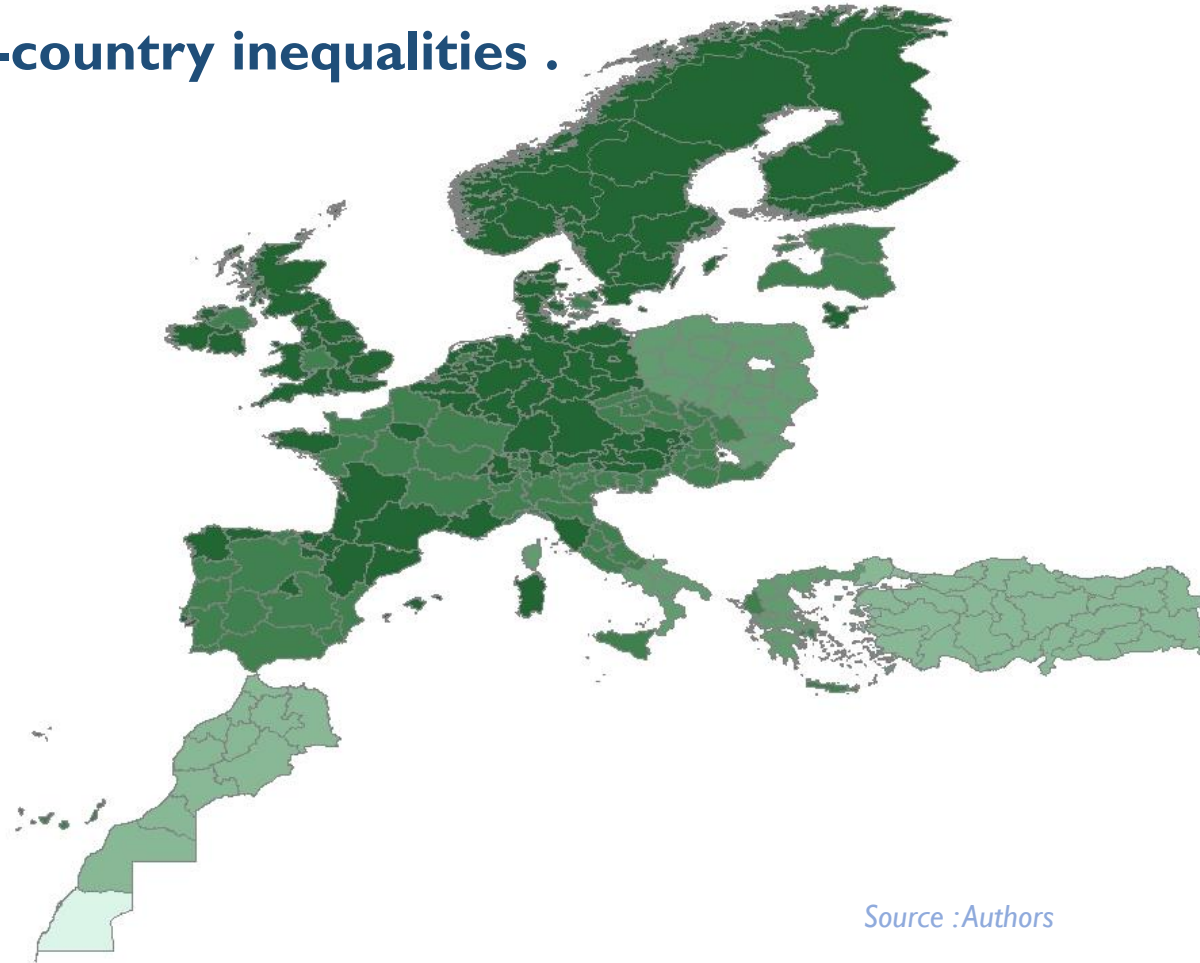
Source : Authors

Results : SWB thems disparities

- **Morocco and Turkey contribute the most to these inequalities.**
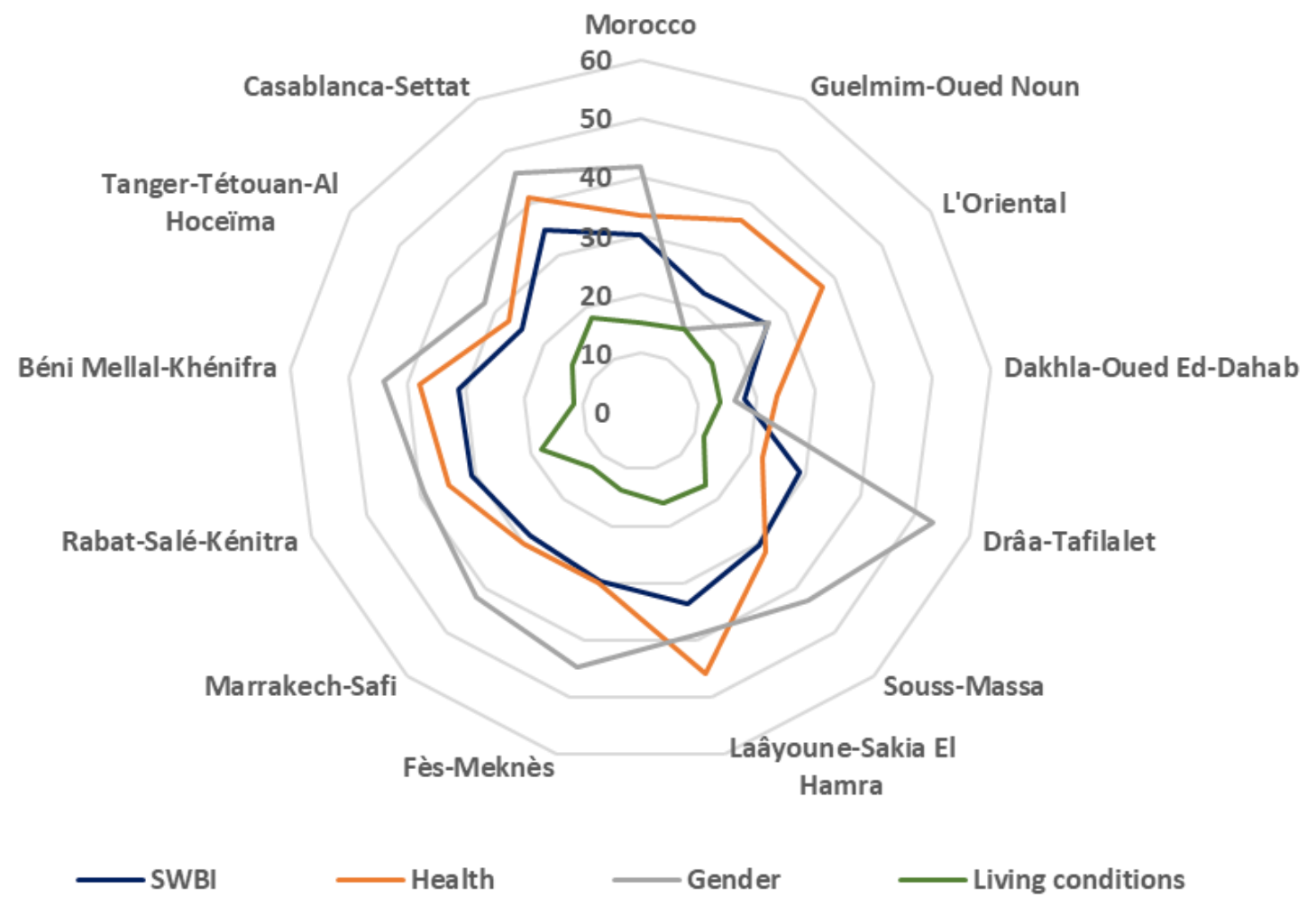
- **However, Morocco (+1%) and several of its regions recorded the highest SWBI growth rates in the Benchmark.**

Legend:
- -0,25% _ 0%
- 0% _ 1,07%
- 1,07% _ 1,32%
- 1,32% _ 1,58%
- 1,58% _ 2,03%
- 2,03% _ 3,33%
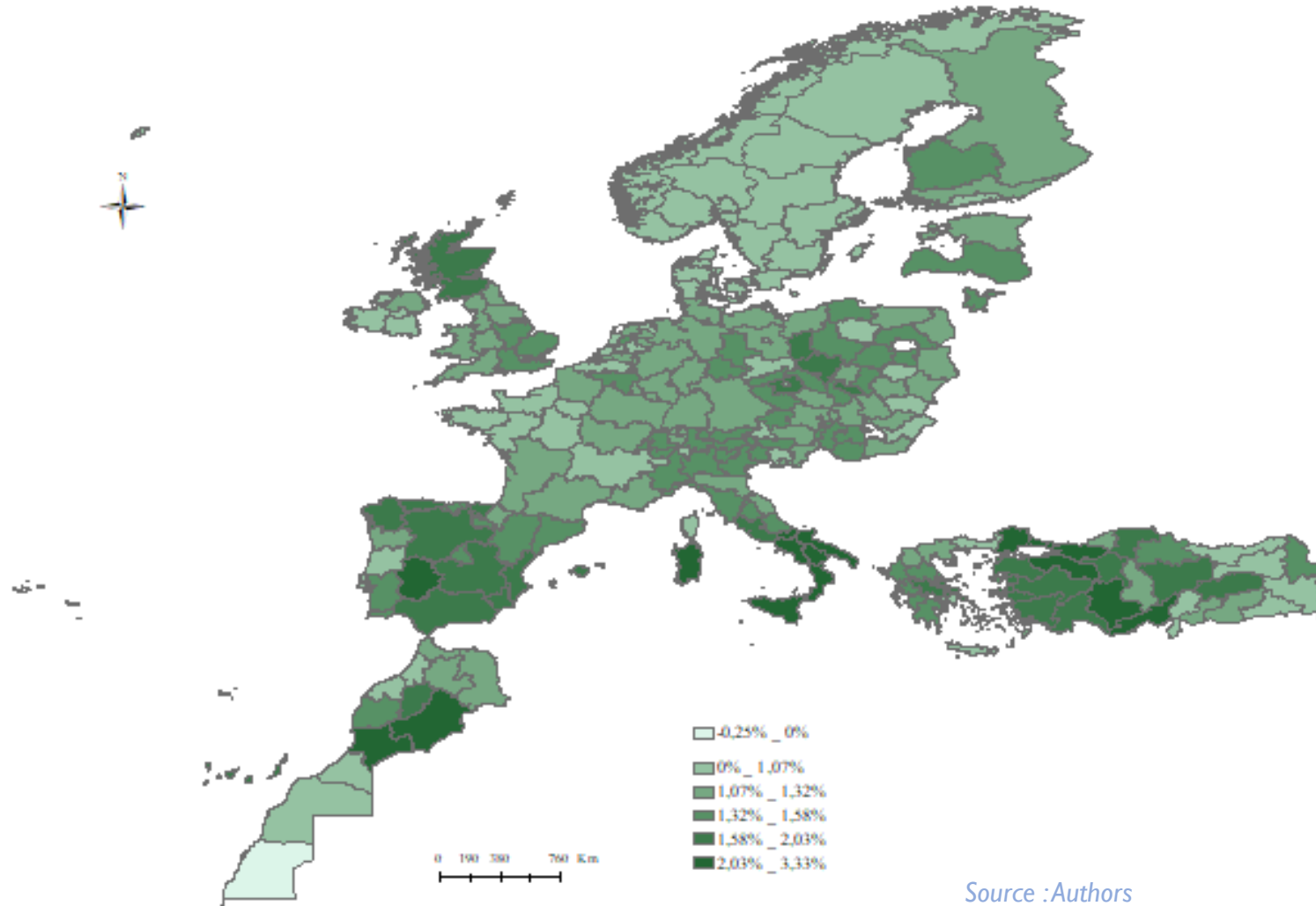
Source : Authors

Result : Spatially autocorrelated error β-convergencemodel

▪ **The absolute β-convergence of the regions fellow a spatially autocorrelated error model (SEM)**.

	SWBI
Specification	SEM
β	-0.0083*** (0.0012)
Constant	0.043*** (0.0047)
Moran'I (2019)	0.84*** (22.2)
λ	0.57*** (0.041)
AIC	-3200.2
θ	0.009
τ	82.8

Source : Authors

Conclusions, recommendations and perspectives

Public policy recommendations

Programming

- Use the conceptual framework of social well-being in the diagnosis, programming, prioritization, implementation and evaluation of regional development projects planned by regional councils (RDP).
- Think about localized measures focused on reducing territorial disparities on the different articulated segments of social well-being (areas/territories <- international perspective) and to integrate territorial priorities with national ones and bring Pub Policies into convergence. (functional/sectoral/territorial).

Investment charter

- Use the conceptual framework of social well-being as a decision support tool with other diagnostic tools (Haddad et al., 2022) to define the strategic priorities of the regions in a complementary logic (Deegan et al., 2021) with a flexible organization of public and private actors (central/territorial) (Kangas & Ryynänen, 2022).
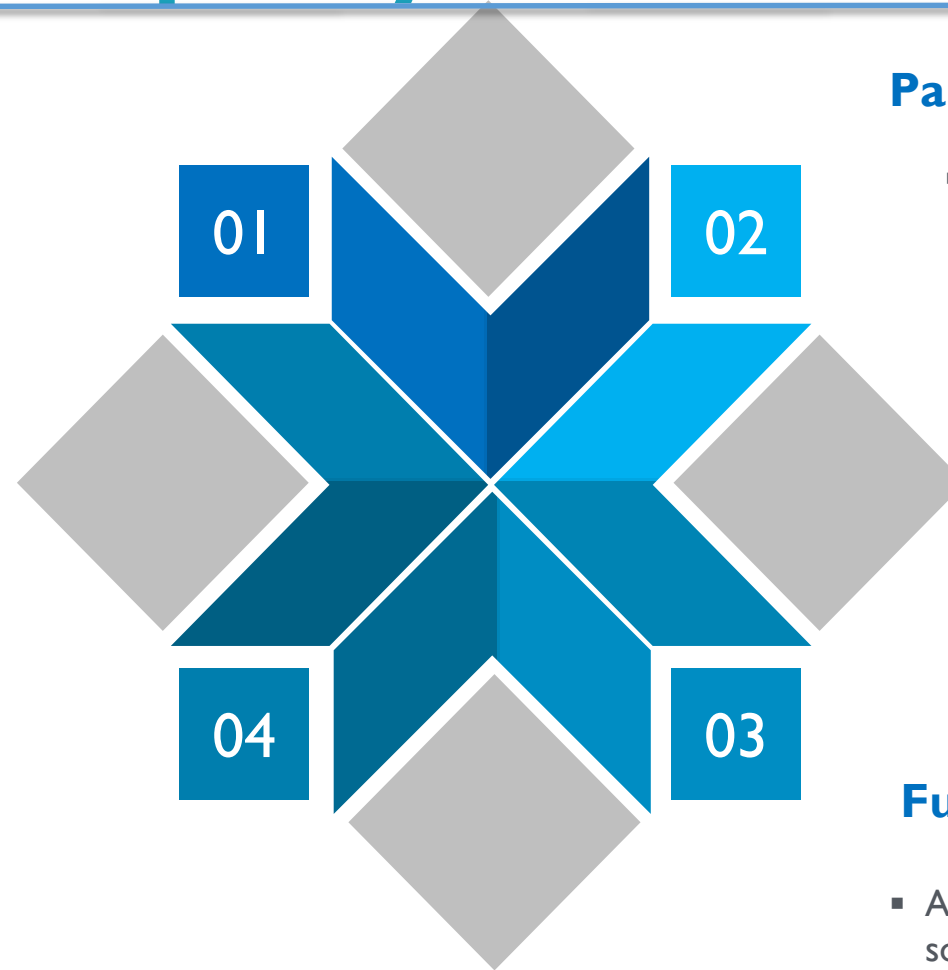
Partnership

- Orient the multilateral (EU/OECD) and decentralized partnership around common social transition objectives and actions capable of accelerating convergence,.

Funds

- Align the regional eligibility system for the interregional solidarity fund and the social upgrading fund with the objectives of convergence of social well-being as recommended in its spirit of creation (RAC, 2011).

Limits and possible extensions

Aggregation

→ To overcome the limits of our aggregative-compensatory approach (Alaimo, 2022; Maggino, 2017):

  → Adopt **partially compensatory approaches** (Alaimo & Seri, 2023)

  → or **non-compensatory** (Alaimo, Arcagni, et al., 2022; Conigliaro, 2022; Fattore et al., 2015; Mazziotta & Pareto, 2016)

Territorial scope & Subjective WB

→ **Refine the territorial scope** to analyze SWB disparities between districts, within vulnerable territories (oasis areas, mountainous areas, rural areas, landlocked areas, etc.), between cities of ≠ sizes.

→ **Expanding to subjective social well-being** to correct material and quantitative bias (Leite Mota, 2021): Uniform survey and/or Unconventional data.

Determinants

→ **Identify the exogenous variables, not taken into account (SEM),** contributing to convergence: structural transformation (Caselli & Coleman II, 2001), human capital and technological advances (Martin & Sunley, 1998), displacement of skills (Ganong & Shoag, 2017) and regional groupings (Iammarino et al., 2019).

→ **Extension of the analysis by controlling the determinants of the equilibrium** state using a conditional convergence model.

Temporal scope

→ **Broaden the analysis to the post-pandemic period** to note the robustness of the absolute convergence of social well-being to exogenous shocks (Coniglio et al., 2016; Buccellato & Corò, 2020).

→ **Expanding the retrospective scope** of social well-being.

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Regional Well-Being Disparities in Morocco and its OECD Partners

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Abstract

This article proposes a multidimensional analysis grid to assess regional disparities, transcending monetary considerations. This grid agrees overall with the common framework that prevails in the literature review that we have carried out. It is built around four dimensions of well-being: economy (development, labor market, human capital and innovation), social (health, living conditions and gender), environment and governance. Our analysis of regional disparities was based on the synthesis of fifteen indicators by constructing a Synthetic Index of Well-being (SIWB) by combining its four dimensions using an aggregative-compensative approach. This analysis covers Morocco, 35 of the OECD member countries and their 389 regions between 2000 and 2019. We have assessed the dynamics of Moroccan regions compared to those of the benchmark. Thus, we have highlighted the gaps to be made up in relation to the different areas of well-being as well as their thematic variations.

Boumahdi, I., & Zaoujal, N. (2023c). Regional well-being disparities in Morocco and its OECD partners. *Social Indicators Research*. https://doi.org/10.1007/s11205-023-03097-7
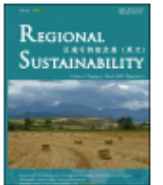

Full Length Article

Is there regional convergence between Morocco and its OECD partner countries in terms of well-being?

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ABSTRACT

Morocco wants its 12 regions to play the role as the main lever of its public policies to initiate harmonized spatial multidimensional development. In the context of this goal and Morocco's openness over the past two decades to bilateral and multilateral cooperation in an effort toward regional integration, this article studies the convergence of 389 regions in 36 countries (Morocco and 35 of its partner member countries of the Organization for Economic Co-operation and Development (OECD)) between 2000 and 2019 in terms of well-being. To this end, we considered the territorial dimension of β-convergence models for well-being and its four domains (economic, social, environmental, and governance). Then, we adapted the absolute β-convergence model taking into account the existence of spatial heterogeneity according to five specifications of spatial models. Thus, apart from environmental domain, we showed that β-convergence of regions is significant for well-being and three of its domains (economic, social, and governance). These convergences are made by a spatially autocorrelated error model (SEM). However, the speed and period of convergence are relatively low for social domain, partly explaining the very exacerbated tensions at the territorial level. The fastest convergence was achieved in governance domain, followed by economic domain. This suggests that emerging countries must pay particular attention to national public action in favor of social cohesion at the territorial level. The lack of convergence in environmental domain calls for common actions for all countries at the supranational level to protect the commons at the territorial level.

Boumahdi, I., & Zaoujal, N. (2023a). Is there regional convergence between Morocco and its OECD partner countries in terms of well-being? Regional Sustainability, 4(1), 81-95. https://doi.org/10.1016/j.regsus.2023.03.004

More information

Intangible capacities such as creativity, innovation and know-how are increasingly becoming essential conditions for territorial development. These capacities refer to the paradigm of economic complexity which synthesizes the competitive capacity of territories. Also, we calculated the regional economic complexity of Morocco as well as indices related to the diversification of regions and the ubiquity of activities. We then highlight the link between the complexity of regions and their well-being. For this, we used a microdata base of nearly 8000 industrial establishments over the period from 1990 to 2015 for the twelve Moroccan regions and 223 activities. Thus, it turns out that Moroccan regions form a space-product network around nuclei of different densities illustrating productive systems of such different maturities. This reveals the emergence of ecosystems around complementary activities leading to an increase in the complexity of the regions associated with them. In addition, regions of high complexity exhibit high diversity combined with low ubiquity with relatively stable regional dynamics between 1990 and 2015. The complexity spreads from the economic capital Casablanca-Settat to the neighboring regions with a high intermediate complexity then those adjacent with a low intermediate complexity before spreading to the other southern regions with low complexity. Finally, it turns out that a high level of economic complexity is linked to a high level of certain components of objective well-being. Thus, high economic complexity is linked to such high economic development accompanied by qualified human capital and advanced innovation improving their living conditions and health with, however, low levels in terms of the environment and governance.

This article estimates the subjective well-being of the oasis, peripheral and border region of Drâa-Tafilalet in Morocco through sentiment analysis of its media coverage. We extracted nearly 174,000 articles published between October 1991 and September 2020 from the website of a Moroccan newspaper with a large circulation and detected those covering the region in question. Then, after the preprocessing phase, we analysed the textual data of these articles by determining the sentimental polarity of the words used to build a monthly subjective well-being indicator for the Drâa-Tafilalet region. Thus, we identified nine early warnings of local subjective well-being malaise that were triggered between October 1992 and September 2020.

Boumahdi, I., & Zaoujal, N. (2024). Is there a Proven Relationship Between the Economic Complexity of Moroccan Regions and their Well-being? Journal of the Knowledge Economy. https://doi.org/10.1007/s13132-024-02115-4

Boumahdi, I., & Zaoujal, N. (2023a). Regional subjective well-being through a media sentiment index : Case of the Drâa-Tafilalet oasis region of Morocco. *Regional Science Policy & Practice*. https://doi.org/10.1111/rsp3.12644

Thanks

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UNECE, Seminar on measurement of wellbeing
8 – 9 July 2024, Palais des Nations, Geneva.