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Abstract

This investigation quantifies the levels of cultural tightness and looseness prevalent in European societies, focusing on NUTS-2 regional divisions. Cultural dynamics occupy a pivotal role in shaping individual decision-making, particularly when addressing global risks like pandemics, environmental crises, and resource depletion. In an innovative approach, we introduce the Regional Index of Looseness (RIL) as a means to operationalize society's positioning along the spectrum of tightness-looseness. In contrast to previous cross-country studies, we harness regional data to acknowledge the intrinsic regional variations within European nations. The RIL index appraises two facets of looseness: the horizontal and vertical dimensions, providing a more nuanced understanding of societal values. The application of the RIL index to the investigation of its impact on vaccination choices and the effectiveness of NPIs offers invaluable insights for policymakers grappling with the management of global risks. This research presents a novel perspective at the regional level and scrutinizes the multi-dimensional aspects of cultural tightness and looseness.

JEL-Codes: Z130, O570, I180.

Keywords: tightness, looseness, culture, regional studies.

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Introduction

This research investigates cultural tightness and looseness within European societies at the NUTS-2 regional level. Cultural dynamics play a pivotal role in shaping individual decision-making, particularly in addressing global risks, such as pandemics, biodiversity loss, and environmental damage. Building on seminal work by Pelto (1968) and subsequent studies by Gelfand and other scholars, the degree of cultural tightness or looseness has gained significance in the social sciences. Tightness characterizes societies with strong social norms and strict behavioral expectations, where deviation from these norms is less tolerated. In contrast, looseness characterizes societies with more flexible norms, providing individuals greater freedom to deviate from established rules.

The focus of the tightness-looseness framework is not on the specific content of social norms but rather on the homogeneity or heterogeneity of values and behaviors within a group. This means that even two groups with vastly different norms can both exhibit extreme adherence to their respective norms. Tightness and looseness have been extensively studied in cross-country comparisons to understand their impact on individual behavior in response to external shocks. Tighter cultures tend to promote conformity to social norms and rule-based behavior, while looser cultures exhibit greater tolerance for diverse expressions and deviations from norms.

Cultural tightness and looseness are becoming increasingly important in cross-cultural research, particularly in understanding how individuals respond to government interventions during global crises, such as the COVID-19 pandemic. Tightness is associated with order, coordination, and social stability, while looseness is conducive to innovation and adaptability. These cultural dimensions can change over time in response to historical events, leadership shifts, and external pressures. The concept of tightness and looseness has found applications in various fields, including business management, education, and consumer behavior, helping organizations and policymakers understand how cultural norms influence decision-making.

The paper proposes a new index, the Regional Index of Looseness (RIL), based on regional data, which provides a regional-level perspective that is especially relevant in Europe due to its regional differences within each country. This index measures different dimensions of tightness-looseness, including horizontal looseness related to peer-level values and vertical looseness related to societal opinions about government norms. The paper also explores the impact of tightness and looseness on vaccination choices and the effectiveness of NPIs. Overall, this research offers a fresh regional-level approach to understanding cultural tightness and looseness and its multifaceted implications.

The structure of the paper is as follows: Section 2 describes the data and methodology for computing the RIL, while Section 3 presents descriptive statistics and tests the correlation of the RIL with previous indices. Finally, the concluding section wraps up the paper.

2. The Regional Index of Looseness (RIL): data, methodology, and first results

This study presents a novel index for measuring cultural tightness and looseness in European regions at the NUTS-2 level. It distinguishes between horizontal and vertical dimensions of looseness, offering a more nuanced perspective. Horizontal looseness reflects opinions on peer-level values, acceptable actions, and behaviors, while vertical looseness pertains to societal views on government norms and the relationship between citizens and the ruling class. Unlike previous research, we employ a different empirical approach to assess heterogeneity within each region.

The literature on cultural tightness and looseness is primarily concerned with assessing the homogeneity or heterogeneity of values within a society rather than determining specific directional opinions. Gelfand and colleagues (2021) emphasize that the strength of, and tolerance for deviations from norms, is operationalized as variation in norms, values, and behavior. Uz (2015) suggests that standard deviation (SD) is the natural statistic for measuring Cultural Tightness-Looseness (CTL). However, the use of SD in cross-cultural comparisons has sparked debates due to its potential to introduce bias and response style influence. Researchers have questioned whether SDs are valuable constructs and whether they should be adjusted to account for cultural differences.

A second issue relates to the choice between domain-general and domain-specific constructs in measurement. This debate addresses the utility of domain-general g-factors versus domain-specific s-factors, a topic of ongoing discussion in various fields. Researchers have employed both domain-general and domain-specific measures of dispersion, and it remains an open question as to which is the most suitable for capturing the essence of CTL.

Additionally, the operationalization of these indexes raises questions. The survey questions used to assess heterogeneity in values typically employ ordinal, not cardinal, variables. This critical distinction has been overlooked in prior literature. Ordinal variables have categories with unequal distances between them and do not allow for basic arithmetical operations. Previous contributions often use SD to measure the variability of these ordinal variables, implicitly making a supraordinal assumption about the nature of the continuum underlying the categories.

Measures of dispersion for ordinal variables need to account for the difference between the observed distribution and a theoretical uniformly distributed set of preferences. Blair and Lacy (2000) introduced the l^2 measure, a normed index of concentration that includes a measure of dispersion $(1 - l^2)$ for an ordinal variable with k categories. It indicates the relative position of a distribution along the continuum from maximum dispersion to maximum concentration, where 0 represents maximum dispersion, and 1 represents maximum concentration, such as when all observations fall into a single category.

In summary, this study introduces a new index for assessing cultural tightness and looseness, distinguishing between horizontal and vertical dimensions. It also addresses ongoing debates about measurement, including the use of SD in cross-cultural comparisons and the choice between domain-general and domain-specific constructs. Furthermore, it highlights the need to consider the nature of ordinal variables and introduces an alternative measure of dispersion for more accurate assessments.

In more formal terms, defining F_i as the cumulative relative frequency for the i[th] cell of the variable of interest Y:

$$1 - l^2 = \frac{\sum_{i=1}^{k-1} F_i(1 - F_i)}{(k-1)/4} \quad (1)$$

We remand to Blair and Lacy (2000) for all the technical details; nonetheless, it is useful to highlight that $1 - l^2$ can be interpreted as the proportion of the maximum possible sum of cumulative binomial variances exhibited by the observed distribution. Hence, $1 - l^2$ can be seen as a normed distance, expressing how far in a F-dimensional space the observed distribution is from the point of maximal dispersion.

One may ask if this approach leads in practice leads to different results than the simpler use of SD. Figure 1 offers a comparison between the index computed using SD as a measure of dispersion on the upper side, and $1 - l^2$ in the bottom, where the regions are divided into deciles. As it is possible to see, while of course a certain correlation emerges, there are notable exceptions of regions that belong to a different decile according to the method used, such as for instance Sicily and Sardinia in Italy, Norra Mellansverige in Sweden, or even Galicia in Spain, among the others. We may hence conclude that it is important to use an appropriate index, since some regions may not only change the value of the index, but even change the decile they belong to.

In order to compute the RIL, we pick a total of eighteen variables from EVS (2017 and 2008). Fourteen represents the horizontal dimension of tightness-looseness, e.g. how acceptable some different behaviour are considered. These fourteen questions ask respondents: "Please tell me for each of the following whether you think it can always be justified, never be justified, or something in between (1 never-10 always)".

Other four questions, which heterogeneity we use to operationalize the vertical dimension of the RIL, are also taken from EVS (2017 and 2008). The question asks the respondents: "I'm going to describe various types of political systems and ask what you think about each as a way of governing this country. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country? (1 very good-4 very bad)".

For each of these variables, the $1 - l^2$ index of dispersion is computed, at the NUTS-2 regional level (respondents for which this information is unavailable are dropped from the data). Please notice that $1 - l^2$ is a normalized index (bounded between 0 and 1), and hence the different number of modalities of the two sets of variables should not be a problem (something that, on the contrary, can not be granted for SD, and thus another reason for choosing our operationalization). The mean value is computed for each of the two sets, obtaining respectively the horizontal and the vertical dimensions of the RIL. Then, computing the mean value of horizontal and vertical RIL, we obtain a third operationalization, e.g. the overall RIL value. Figure 2 summarizes the process, and the variables included in each index.

In accordance with the described methodology, we derived the Regional Index of Looseness (RIL) in its horizontal, vertical, and overall dimensions. To validate this index and establish its correlation with previously established indices, we conducted a correlation analysis with the CTL-DG index proposed by Uz (2015) and the Cultural Tight-Loose index by Gelfand (2021). This analysis involved countries common to both datasets, although it should be noted that the comparison was limited to partial subsets due to variations in country inclusion. Nevertheless, the results, presented in Table 1, revealed intriguing correlations, particularly between the CTL-DG index of Uz (2015) and our horizontal and overall measures of looseness.

Furthermore, our study aimed to expand the dataset by incorporating additional NUTS-2 regions. Unfortunately, Belgium, Germany, Greece, and Moldova did not provide regional-level data in the EVS (2017) dataset, rendering it impossible for us to compute the RIL for these regions. Recognizing the importance of including data from these significant countries, we gathered information from the 2008 dataset, focusing on the same questions. Subsequently, we computed the RIL for the missing regions. Figures 3 and 4 depict heat maps displaying the deciles corresponding to each European NUTS-2 region

included in the sample. This representation applies to both the horizontal and vertical dimensions of the RIL, as well as the overall measure of looseness.

Conclusions

In summary, this study introduces the Regional Index of Looseness as an innovative instrument for assessing the dynamics of cultural tightness and looseness within European NUTS-2 regions. Notably, this research marks the inaugural attempt to gauge tightness and looseness at the regional level, with a particular emphasis on distinguishing between its horizontal and vertical dimensions. The initial application of these indices underscores their potential value in enhancing our comprehension of cultural influences on risk management processes.

Drawing from an extensive body of literature on this subject, our investigation adopts a regional perspective, acknowledging the significance of intra-country variations in cultural dynamics. The results unveil intriguing insights into the effects of cultural tightness and looseness on critical facets of societal behavior, particularly within the context of the COVID-19 pandemic. Notably, our analysis reveals that the degree of cultural tightness or looseness within a region can substantially impact both vaccination attitudes and the efficacy of Non-Pharmaceutical Interventions (NPIs). This underscores the importance of factoring in cultural considerations when crafting and implementing public policies, particularly in situations involving global risks.

Our findings indicate that, in the European context, the decision to receive vaccinations is a more politically influenced matter. Regions characterized by vertical looseness tend to exhibit a greater propensity for vaccine hesitancy. This finding aligns with existing literature suggesting that, in Europe, vaccination decisions are subject to specific political factors. Furthermore, our research demonstrates that regions with looser cultural norms tend to experience higher daily case counts. This outcome is consistent with the notion that NPIs are less adhered to in regions where societal norms are less stringent, resulting in reduced effectiveness in containing contagion and lowering the number of new cases.

Moreover, our study identifies the presence of distinct sub-dimensions of tightness and looseness, namely horizontal and vertical dimensions, providing a more nuanced understanding of how cultural norms influence individual and collective decision-making. By offering a regional-level perspective and exploring multiple dimensions of cultural tightness and looseness, this research enriches our understanding of the

role of culture in shaping responses to external shocks, thereby offering valuable insights for policymakers, scholars, and practitioners alike.

In conclusion, our study underscores the significance of cultural tightness and looseness in deciphering cultural attitudes within European NUTS-2 regions. It introduces a distinctive perspective by disentangling the horizontal from the vertical dimension and emphasizes the pertinence of considering these cultural factors in the management of global risks. Future research in this domain holds the promise of providing further valuable insights into decision-making dynamics under varying cultural contexts, potentially extending to different geographical areas or exploring the temporal dimension.

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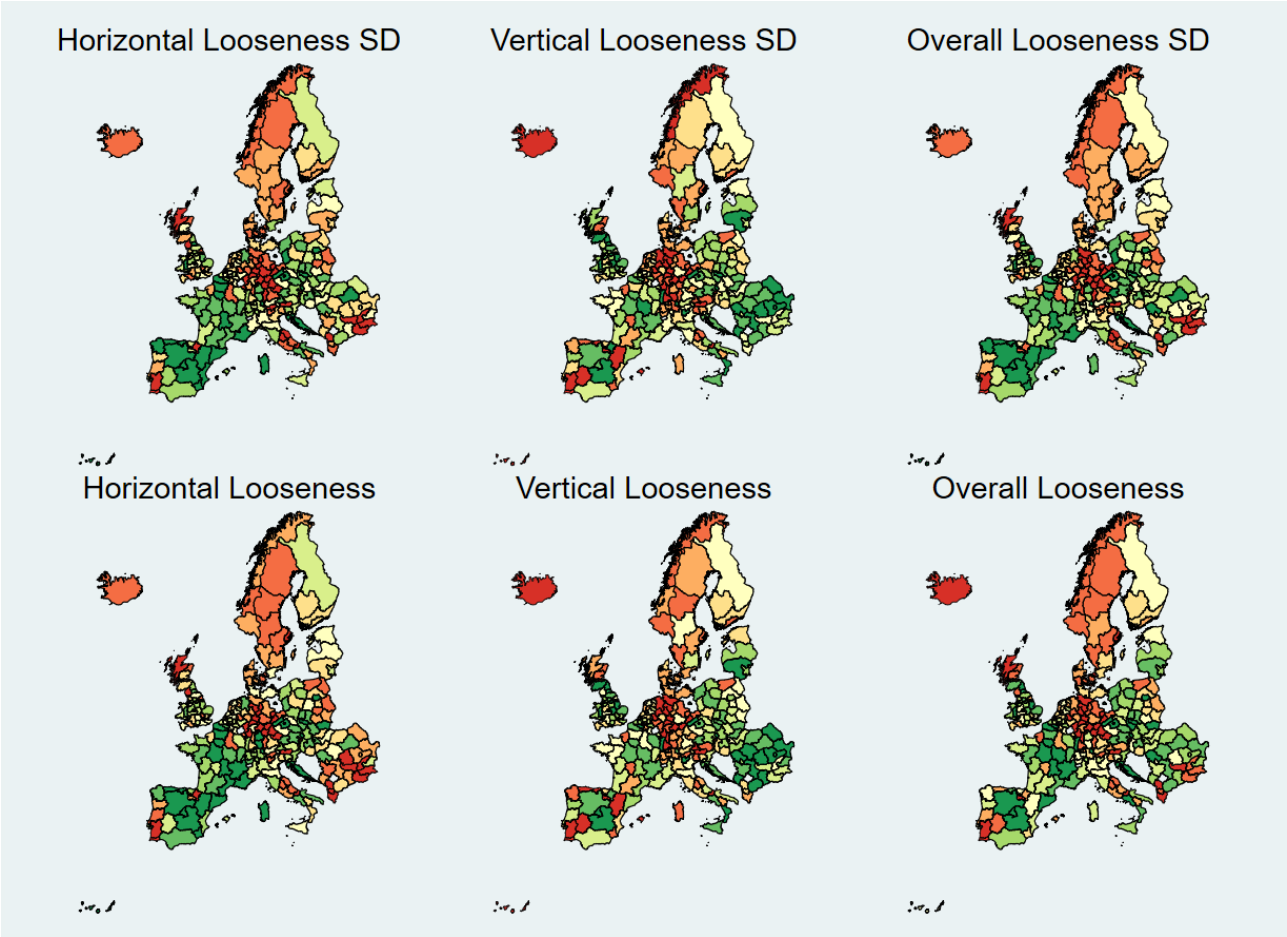
Figure 1 – Comparison between the use of SD or $1 - l^2$ as measure of dispersion



Source: Authors' elaboration from data indicated in the article.

Figure 2 – Regional Index of Looseness, dimensions and questions used.

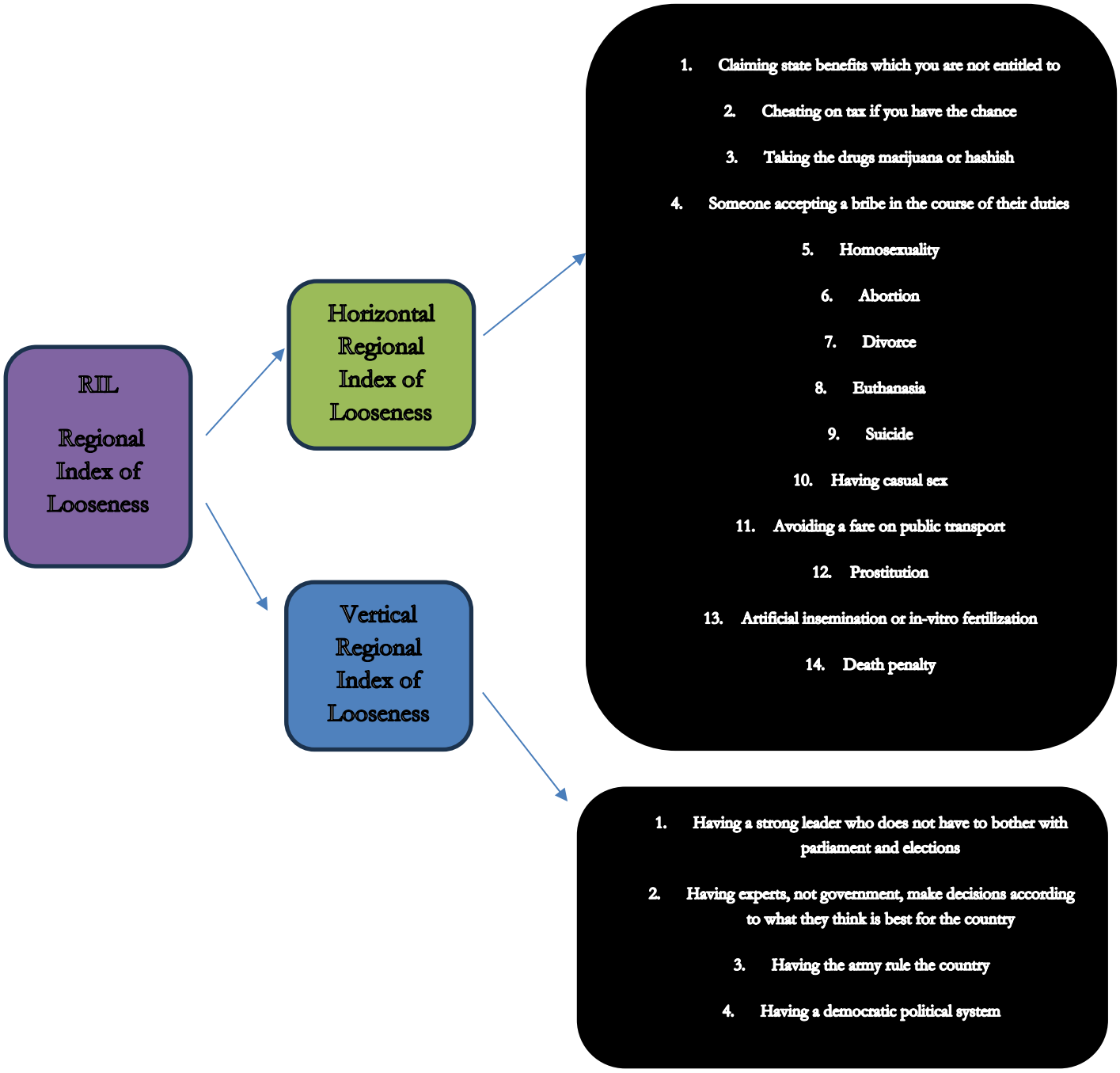
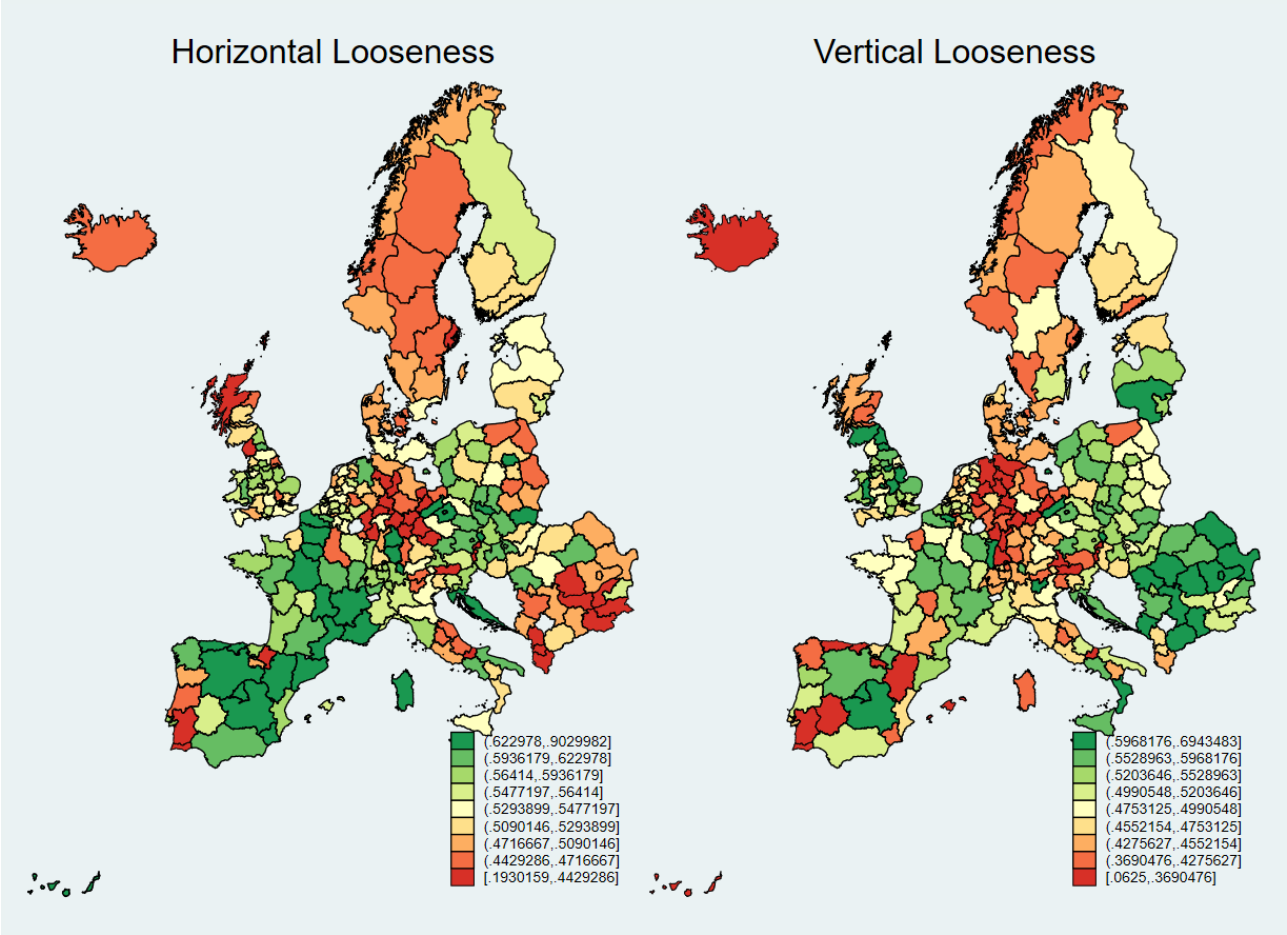
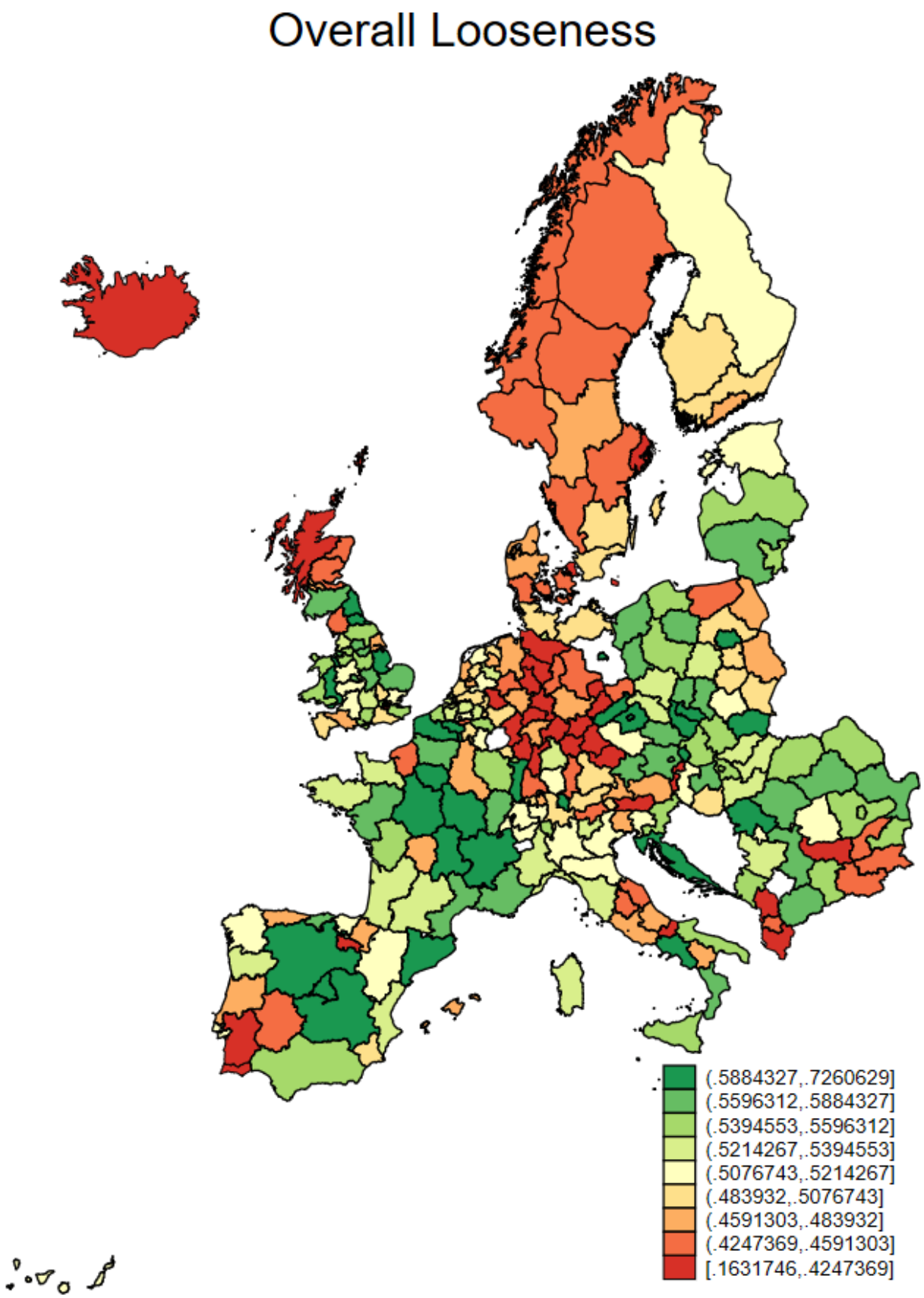


Figure 3 – Heat maps of horizontal and vertical looseness



Source: Authors' elaboration from data indicated in the article.

Figure 4 – Heat map of overall looseness



Source: Authors' elaboration from data indicated in the article.

Table 1 – Correlation matrix between RIL and CTL from Uz (2015)

	Horizontal RIL	Vertical RIL	Overall RIL
Gelfand tightness	-0.3541	-0.4557	-0.4926
CTL domain specific	0.4471	-0.2330	0.0904
CTL domain general	0.6092	0.3391	0.5549
CTL combination	0.0561	-0.2059	-0.1048