

# **Benchmarking regional performance: a critical reflection on indices of competitiveness**

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**Abstract**

The obsession with regional competitiveness has created a voracious demand for indicators by which policy-makers and analysts can measure and compare regional competitive performance. Efforts have increasingly focused on the development of composite indices which combine relevant indicators into one overarching measure, the results of which can be reported in the form of a 'league table'. Such indices and rankings attract widespread attention in the media and could be regarded as a potentially useful means of helping firms, policy-makers and institutions to assess the performance of their economies in comparable (i.e. numerical) terms, and to undertake appropriate remedial strategies.

To date, however, there has been limited critical interrogation of how valid and useful these composite indices are for diagnosing regional development performance. This is thus the principal aim of this paper which will focus on examining their ability to predict and rank regional economic performance. In so doing, the paper contributes to relevant debates on the role and value of benchmarking practices in regional development.

## **1. Introduction: The regional competitiveness debate**

The dynamics of economic, social, political and cultural change in the contemporary world are increasingly shaped by the pursuit and promotion of competitiveness. International organisations ranging from the IMF, the World Bank and the OECD are all busy urging governments everywhere to reform the business climate, promote investment and stimulate competitiveness, while the pursuit of competitiveness has been elevated to primary strategic importance in the Lisbon strategy of the European Union (EU) (Bristow, 2005; Rosamund, 2002; Cammack, 2006). Policy-makers have placed particular emphasis on regions as being critical to the success of overarching competitiveness agendas. The region has increasingly been reified as the critical spatial nexus for fostering the firm level innovation deemed to be so critical to competitive success. In short, the critical propellants of competitive advantage in the global economy lie are deemed to lie in facets of the regional business environment, its knowledge, institutions and networks, such that the region has been regarded as the crucible of economic development and wealth creation (Storper, 1997). More recently, there has been some re-scaling of this orthodoxy with a resurgence of interest in city-regions as the territorial platform for contemporary capitalist and thus competitive success (see Harrison, 2007).

Since competitiveness is a relative concept, it implies the need to compare with others such that regions are inexorably sucked into the continual monitoring and periodic benchmarking of what 'the competition' is doing and where the 'best practice' or 'best offer' lies (Malecki, 2004). As a consequence, the obsession with regional competitiveness has created a voracious demand for indicators by which policy-makers and analysts can measure, analyse and compare regional performance, or find out who is 'winning'. Various attempts have been made to measure and model competitiveness for European regions (e.g. IFO, 1990; Pompili, 1994; Pinelli et al, 1998; Gardiner, 2003). Furthermore, the European Commission has placed the analysis of regional competitiveness at the heart of its ongoing assessment of regional economic performance (Commission, 2000; check if can update?). In the UK, the Department of Trade and Industry (DTI) has published sets of regional competitiveness indicators since 1995 (e.g. DTI – most recent). More recently, efforts have also been made to develop composite indicators of regional competitiveness, following similar trends in the evolution of national competitiveness indicators (e.g. World Economic Forum, 2001; see also Lall, 2001). These combine relevant indicators into one overarching measures, the results of which can be reported in the form of a 'league table' (Huggins, 2003; Robert Huggins Associates, 2006).

Such indices and rankings attract widespread attention and are inevitably seductive for regional development agencies and the media keen to absorb 'quick and dirty' comparative

measures of regional economic performance. To date, however, there has been limited critical interrogation of how valid and useful these indices are in respect of their ability to both provide insights into what drives regional competitiveness, and to generate robust predictions and rankings of regional economic performance. This is thus the purpose of this paper.

The paper now proceeds as follows. It begins by examining the growth in the number and range of indices of regional competitiveness with a view to understanding their purpose and function. It then provides a summary overview of a range of different available indices, exploring both how they are constructed and the conceptualisation of competitiveness on which they are based. The paper then provides a more detailed analysis of some of the most frequently cited indices according to their ability to provide robust rankings of regional economic performance. We conclude with some reflections on the value and role of measures of regional competitiveness.

## **2. Benchmarking regional competitiveness**

The pursuit of competitiveness has assumed key significance for policy-makers at regional, urban and local scales. Within governmental circles, interest has grown in understanding the `competitive performance` of individual regions and cities and in devising policies to promote and enhance competitiveness. Indeed, regional competitiveness has been enthusiastically adopted as a policy goal by the European Commission and by national governments across Europe and America (e.g. Commission, 2004). It has risen to particular prominence in the UK where the pursuit of regional competitiveness has moved to centre stage in the policy statements of national government (e.g. HM Treasury, 2001; DTI, 2004; ODPM, 2004). This has helped create significant interest in the construction of competitiveness indices which enable regions to compare their relative standing in competitiveness league tables. Thus in parallel with the development of national competitiveness indices, a plethora of regional, city and local indices have emerged which rank places on the basis of particular measures of competitiveness. Indeed, we have found 33 different empirical studies examining the competitiveness of states, regions or city-regions in the US, UK and continental Europe which are published on an annual basis. In the US alone, there are at least 8 different groups producing rankings of states or cities on a regular basis (Fisher, 2005). (Note – will need to add footnote or a table identifying these studies). (see also Greene et al, 2007).

These indices are characterised by considerable diversity in respect of their methodological approaches and variety of input measures that may be thought to flow into `revealed` output and ultimately outcome measures (Gardiner et al, 2004). For example, the Progressive

Policy Institute in Washington DC, compiles various indices of the competitiveness of the 'new economy' in US cities and regions (see Atkinson and Wilhem, 2002 cited in Kitson et al – maybe cite an alternative one from US?). Robert Huggins Associates (2004; 2006) produces the World Knowledge Competitiveness Index that seeks to benchmark the world's leading knowledge economy regions, as well as a European Competitiveness Index that ranks cities and regions. Also (note – cite a prominent example from continental Europe – perhaps the German example). In short, there is clearly no consensus on what such indices should measure and how they should be constructed,

Within the breadth of approaches, a broad dichotomy is discernible between analyses which consist of the reporting of a series of separate indices (e.g. DTI, latest ref; plus any others?), and those which seek to develop composite indices, where a range of input, output and outcome variables are measured and aggregated to form a single overarching measure of competitive performance (see Brooksbank and Pickernell, 1999; Huggins, 2003; Robert Huggins Associates, 2006). The increased popularity of composite indices reflects the growing urge to benchmark or rank the comparative performance of one region against another (Greene et al, 2007). Composite indices simplify complex measurements constructs and thus have considerable political appeal (Booyesen, 2002). Some indices are explicitly produced for media purposes, whereas others seek to develop an overall measure of the different factors shaping competitiveness outcomes (Greene et al, 2007).

In part, the growth in competitiveness indices and benchmarking is a product of the growing audit culture which surrounds the neo-liberal approach to economic governance in market economies. In an era of performance indicators and rankings, it is inevitable that regions and cities should be compared against each other in terms of their economic performance. Public policy in developed countries experiencing the marketisation of the state, is increasingly driven by managerialism which emphasises the improved performance and efficiency of the state. This managerialism is founded upon economic and rationalistic assumptions which include an emphasis upon measuring performance in the context of a planning system driven by objectives and targets (Sanderson, 2001). This is closely intertwined with assumptions about the increasingly global nature of economic activity. Thus, as the view that economies are self-contained and self-regulating systems has been replaced with the view that economies are locked in unyielding international competition, a new relationship between the economy, the state, and the society has emerged "in which their distinctive identities as separate spheres of national life are increasingly blurred . . . The result is increasing pressure to make relationships based on bureaucratic norms . . . meet the standards of efficiency that are believed to characterise the impersonal forces of supply and demand"

(Beeson and Firth, 1998: 220; see Greene et al, 2007). This in turn leads to an increasing requirement for people, places and organisations to be accountable for their performance and success to be measured and assessed.

Such indices can serve a useful purpose in highlighting differences between regions in particular economic circumstances. Thus, the business community uses ranking as a tool to determine investment plans and to assess locations for new operations (Ochel and Rohn, year), whilst governments and policy officials use them to identify particular areas of an economy's weakness or make the case for particular public policies or strategies for inducing growth (Fisher, 2005; Dunning et al, 1998). According to Fisher (2005), the indices produced by thinktanks in the US states and regions are predominantly used to promote particular policy agendas.

However, benchmarking competitiveness may also be viewed more cynically as a technology of government and a mechanism by which key institutions in particular act to promote and disseminate its rationality. Cammack (2006; p. 120) describes the "rapid spread of surveillance, benchmarking and peer review through coercive or cooperative supranational mechanisms and close co-ordination between national competitive authorities" and explains how, according to the World Economic Forum, its Global Competitiveness Report is intended 'to help national economies improve their competitiveness'. The first report, produced in 1979 then together with the IMD, covered only 16 European countries. The latest report covers 125 countries and introduces a new Global Competitiveness index with over 90 countries, showing how the system of mutual learning and surveillance has been perfected in recent years. Whereas the old index had 35 variables and covered only three 'key drivers of growth' (macroeconomic environment, quality of public institutions and technology), the new index adds in a wider range of factors 'seen as important determinants of competitiveness', such as the functioning of labour markets, the quality of a country's infrastructure, the state of education and public health, and the size of the market. Cammack (2006; p. 10) concludes "behind all the jiggery-pokery that this entails, the principal purpose of the annual league tables is to support national reformers, aiding and abetting the social/socio-psychological process of 'locking-in'" .

A similar role is played by the European Commission and various national governments in respect of the benchmarking of regional economic performance. The Commission in particular has placed particular emphasis on asserting that meeting the competitiveness goals at the heart of the Lisbon agenda, demands that all regions be required to contribute. According to the European Commission, "if the EU is to realise its economic potential, then

all regions wherever they are located...need to be involved in the growth effort...Strengthening regional competitiveness throughout the Union and helping people fulfil their capabilities will boost the growth potential of the EU economy as a whole for the common benefit of all" (Commission, 2004; pp. vii-viii). In this regard, competitiveness indices help constitute regions as legitimate agents of economic governance, providing critical support to supranational and national economic policy agendas. (Note – the dovetailing of competitiveness agendas with the agendas of devolution and decentralised supply-side approaches to governance in the UK provides similar evidence of this argument, see Bristow, 2005).

Whilst there are thus clear uses for such indices as benchmarks of regional competitiveness, those constructing suitable indices are confronted with a number of key challenges not least of these being what variables to include or what model of regional competitiveness to base the measure upon, and how to aggregate the chosen variables into a composite index for ranking purposes (Heilemann et al; 2006; other refs here). Whilst these decisions clearly have considerable implications for the ultimate indices and their rankings, there has very little critical interrogation to date of the validity of these indices in respect of their ability to produce robust and valid diagnoses of regional economic problems and policy solutions. This is thus the focus for this paper. More specifically, using a sample of competitiveness indices we focus on exploring the following three questions: firstly, how closely are competitiveness grounded in theoretical conceptions of regional competitiveness; secondly, how valid are the components of these indices and the approaches taken to combining them; and thirdly, how effectively are these indices able to predict and rank regional economic performance.

### **3. Regional competitiveness: analysis of composite indices**

From the indices available, we have chosen here to focus on only those measuring competitiveness of regions, cities or metropolitan areas and which have been in existence since 2003 (see Table 1).

**Table 1: Overview of rankings analysed**

Name	Author(s) and/or organisation	Issuing date/frequency	Issuing entity type	Geographic focus	entities covered in the latest report	No. of indicators in the latest report	Own survey data included?	Weights applied for overall index
UK Competitiveness Index	Huggins Associates	2000-	PFP	UK	12	15	N	equal (implicitly non-equal)
Bundesländer im Standortwettbewerb	Bertelsmann Foundation	2001-biennially	PNP	GER	16	50	N	non-equal
Economic Freedom of North America	Fraser Institute, National Center for Policy Analysis	2002, 2004-2006	PNP	USA/CAN	60	9	N	equal (implicitly non-equal)
The State New Economy Index	Kauffman Foundation for 2007, Progressive Policy Institute (PPI) for 1999 and 2002	1999;2002;2007	PNP	USA	50	26	N	non-equal
State Competitiveness Report	Beacon Hill Institute	2001-	PNP	USA	50	42	N	equal (implicitly non-equal)
Small Business Survival Index	Small Business & Entrepreneurship Council	1996-	PNP	USA	51	31	N	equal

Most of these indices are published by private non-profit organisations and all rely on external data (rather than survey data) to build their indices. All also adopt a different approach to measurement in respect of the number and variety of variables included and the approach to weighting them to convert them to index form. These different approaches to measurements do, however, share a number of common characteristics. Not least among these is their implicit acknowledgement that a multi-dimensional approach is required since “competitiveness is not an attribute that can be measured directly; all one can do is gauge its nature and magnitude by the shadow it casts” (Kresl and Singh, 1999; p. 1018).

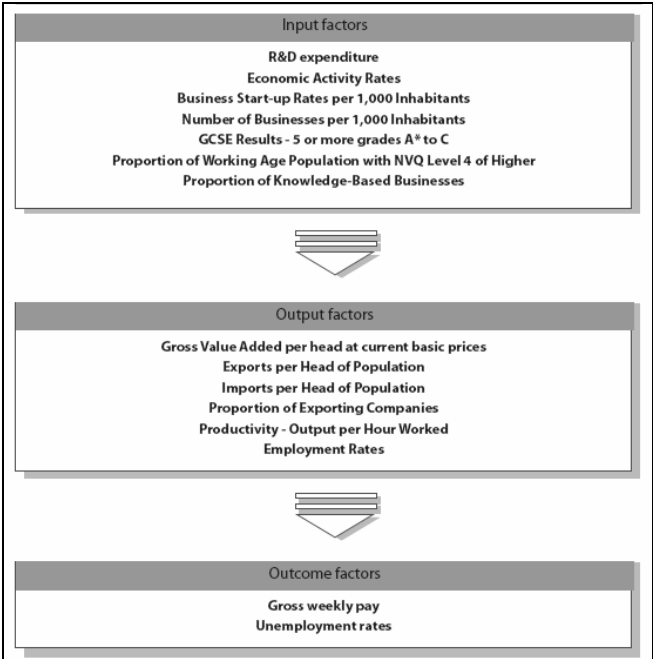
In the following, the six indices mentioned above are analysed in more detail over the next sections. First, some background information on the issuing organisation, the history and rationale behind is given, before analysing the results. When analysing the results, we looked at the relation of the ranking results and how they relate to future growth in terms of regional GDP and regional GDP per capita, as well as future unemployment. We see this as an ‘ultimate’ test as the indices analysed explicitly or implicitly claim to function as a proxy for economic performance.

### 3.1 UK Competitiveness Index

*Background information*

The UK Competitiveness Index is an annual measure of the competitiveness of UK regions since 2000, with the analysis for 1997. The report is published by Robert Huggins Associates, a private consultancy based in Wales. The consultancy has a relatively long history of publishing composite indices and many of the indices can now freely available on the internet, although they are also still sold by the company. The 2006 report was the first produced in conjunction with the Work Foundation. It is also the latest version available, benchmarking not only 12 regions but also 433 UK localities.

The aim of the index as set out by the authors is “to assess the relative economic competitiveness of regions and localities in the UK by constructing a single index that reflects, as fully as possible, the measurable criteria constituting place competitiveness.” (Huggins/Day 2006: 60) When defining place competitiveness, it explicitly follows the macroeconomic definition of competitiveness as set out by Michael Storper which sees competitiveness as the capability of an economy to attract and maintain firms with stable or rising market shares in an activity, while maintaining stable or increasing standards of living for those who participate in it (Huggins/Day 2005: 43) This view transfers into a three-factor model, set out earlier by Huggins (2003), as outlined in Figure 1.



**Figure 1: Three factor model of the UKCI (taken from Huggins/Day 2006: 60)**

All the single indicators contained within the analysis are aggregated into one index for each of the three factors. All values are therefore ranked and expressed in relation to the UK

average so that all the values can be compared, leading to numbers lower, equal or higher than 100. The final number for the regional competitiveness index is derived by aggregating the scores of all three factors. As the result is sometimes driven by a few strong outliers, a normalisation technique is applied resulting in a distribution more closely to the Gaussian distribution. Although the authors claim not to apply any weighting for the final index, due to the different number of indicators under the three measures, outcome factors receive the highest weight as only two are used to derive the sub-ranking, compared to seven for the input factors and six for the output measures. There is no explanation given for this rather implicit weighting judgement. Table 2 presents the results for 1997 and 2006.

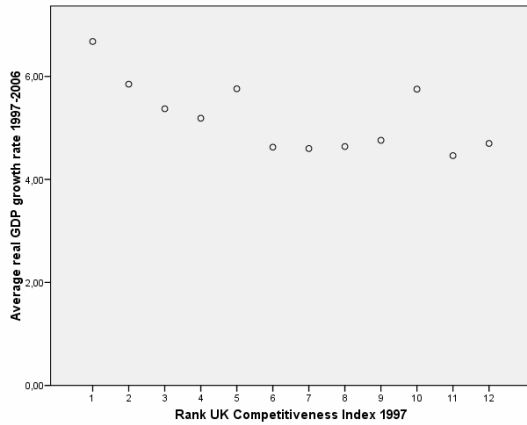
**Table 2: UK CI ranking results for 1997 and 2006**

Region	Rank 1997	Rank 2006	Change
East Midlands	4	4	-
Eastern	3	3	-
London	1	1	-
North East	12	12	-
North West	7	8	- 1
Northern Ireland	10	10	-
Scotland	8	6	+2
South East	2	2	-
South West	5	5	-
Wales	11	11	-
West Midlands	6	7	- 1
Yorkshire and The Humber	9	9	-

As can be seen, the changes are only minor with respect to the final ranking. However, despite the minor changes in the ranking results, the scores behind the ranking did change during that period (Huggins/Day 2006: 9).

### *Analysis*

As a first step we looked at the relation between the ranking results of 1997 and average regional GDP growth from 1997 to 2006.



Source: UK CI 2000; ONS

**Figure 2: UKCI ranking results vs. average GDP growth**

As seen in Figure 3, there is a negative tendency. This means, the better the rank, the higher the average GDP growth rate for the period analysed. This correlation is relatively strong, with  $-0.643$  and a significance on the 5 per cent level, as can be taken from the Spearman correlation results displayed below (Table 3).

		Average unemployment rate 1997-2006	Average real GDP pc growth rate 1997-2006	Average real GDP growth rate 1997-2006
Rank UK Competitiveness Index 1997	Correlation Coefficient	0,462	-0,476	-,643(*)
	Sig. (1-tailed)	0,065	0,059	0,012
	N	12	12	12
*. Correlation is significant at the 0.05 level (1-tailed).				
**. Correlation is significant at the 0.01 level (1-tailed).				

**Table 3: Spearman correlation for the UKCI 1997**

The results remain stable when looking at the average GDP growth per capita over the 1997 to 2006 period, although the correlation is weaker and no longer significant. When looking at unemployment over that period, it can be seen that the ranking results point to the right direction although with a weaker correlation and no significance.

It can be concluded that the UK Competitiveness Index may function as a rough proxy for future economic performance, which may not be surprising as the variables tested form an important part of the index itself, with unemployment rate being one of two indicators in the outcome measure with an overall weight of 1/6th.

## Bundesländer im Standortwettbewerb („Bundesländer and location competition“)

### *Background information*

The Bundesländer im Standortwettbewerb Index (BISW) has been published every other year since 2001 by the Bertelsmann Foundation, a private non-profit think tank in Germany. Although the ranking was first published in 2001, it encompasses rankings calculated back from 1986. Before 2007, two rankings were computed: a Success Index (SI) and an Activity Index (AI). The Success Index measures the current level of ‘success’ in terms of income, employment and security. These three factors consist of six variables, namely GDP level and GDP growth for income, unemployment rate and employment rate for employment as well as people living from social security and number of unsolved crime in the field of security. These six sub-factors were weighted 1:1 for building the score in the three areas of income, employment and safety. These areas then are finally weighted 1:1:0.25, based on previous studies and polls.

The Activity Index consists of the same three variables income, employment and safety, further divided into six variables in a manner similar to the Success Index. The final score for the AI then was derived by weighting the three sub-rankings 1:1:0.25.

In addition, the authors looked at underlying factors, influencing both, the SI and AI. Here, the results of an econometric analysis were applied. The authors looked at which factors correlate with the six variables of the indices with the help of a fixed effects panel analysis. Based on the results, these 44 factors and their weights were taken into account. Finally, the results were transferred into a scale from 1 for the lowest performer to 10 best performer to be able to come up with a sub-ranking for all factors. Below is a list of all factors, their weight and influencing variable:

<b>Factor</b>	<b>Influencing variable</b>	<b>Weight</b>
Transfers from other Bundesländer	GDP growth	29.0 %
Number of graduates from universities or universities of applied science	Percentage of welfare recipients GDP growth	4.1 % 2.1%
Number of people leaving school without a degree.	GPD	0.5 %
Number of single parents	Percentage of unsolved crime	0.9 %
Percentage of agricultural workers in total employment	Percentage of unsolved crime	0.9 %
Percentage of second sector workers	Unemployment	21.3 %

in total employment		
Percentage of urban population in total regional population	Percentage of unsolved crime GDP growth	18.1 % 7.0 %
Percentage of part-time worker in total regional population	GDP Employment Percentage of welfare recipients	28.2 % 13.3 % 6.0 %
Percentage of welfare recipients of total regional population, previous period	Percentage of welfare recipients	27.8 %
Apprenticeship training positions: supply and demand ratio	Unemployment Employment	22.8 % 4.6 %
Active employment policy expenditures of regional administration	Percentage of welfare recipients Unemployment Employment	6.1 % 5.6 % 4.1 %
R & D expenditures of public bodies in the regions	GDP	15.4 %
Higher education expenditures	Percentage of unsolved crime GDP growth Unemployment	9.0 % 3.9 % 3.6 %
Social welfare expenditures	Unemployment GDP	2.8 % 0.1%
GDP per head	Percentage of unsolved crime	14.8 %
Foreign direct investments	Employment	2.3 %
Divorces per marriage	Percentage of welfare recipients	17.8 %
Export rate of industry	Unemployment	5.1 %
Employment rate of women	Employment	6.1 %
Regional birth surplus	Percentage of unsolved crime	28.9 %
Business tax rate	Percentage of welfare recipients	7.8 %
Level of social welfare per head and year	Percentage of unsolved crime GDP growth rate	12.2 % 5.0 %
Number of insolvencies per 10,000 companies	Unemployment Percentage of unsolved crime	9.9 % 4.5 %
Intensity of political party competition	GDP growth rate	1.2 %
Investment rate	GDP growth rate	8.3 %

Investment rate of industry	GDP growth rate	12.2 %
	Employment	8.3 %
Youth employment rate	Employment	6.3 %
Subsidies from federal government	GDP growth rate	13.3 %
	Employment	3.6 %
Number of air passengers entering an aeroplane in a region	GDP growth rate	1.8 %
Number of members of a club	GDP	5.1 %
Public employment	Percentage of welfare recipients	18.0 %
	GDP	16.2 %
	Unemployment	5.6 %
	Employment	2.4 %
Patent applications per 1 m inhabitants	GDP	11.6 %
	Employment	8.4 %
	Percentage of welfare recipients	2.3 %
	Unemployment	0.9 %
Number of high-tech patent applications per 1 m working population	GDP growth rate	2.1 %
Annual public payroll costs	Employment	1.2 %
Teacher-student-ratio	Percentage of welfare recipients	8.8 %
Self-employment as percentage of working population	GDP	11.2 %
	GDP growth rate	4.5 %
First-year students	GDP	4.8 %
	Percentage of unsolved crime	2.9 %
Average length of labour court disputes	Employment	14.5 %
	Unemployment	7.2 %
	Percentage of welfare recipients	1.4 %
Average length of criminal court cases	Percentage of unsolved crime	2.6 %
Average length of administrative court cases	Unemployment	4.7 %
Infrastructure	Percentage of unsolved crime	5.2 %
	GDP	5.1 %
	Unemployment	0.2 %

Share of world trade	GDP	1.2 %
Interest burden of regional budget	Employment	25.0 %
Interest expenditures to tax income	Unemployment	10.1 %

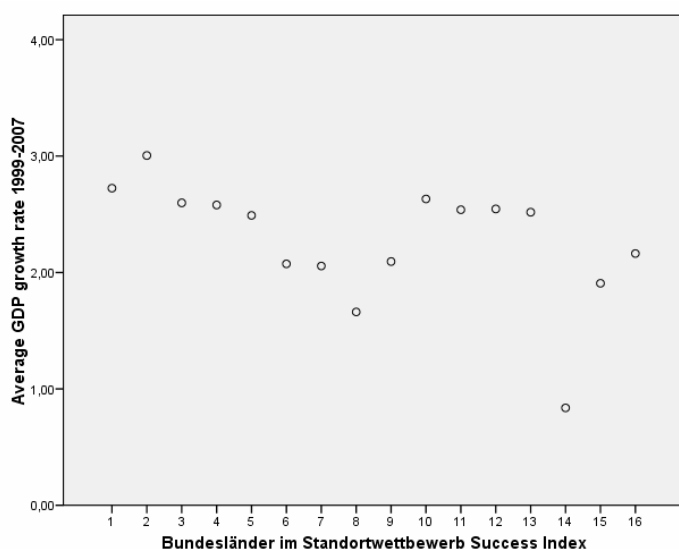
**Table 2: Factors of the BISW 2007 report**

The ranking is not based on an explicitly set concept of regional competitiveness. Instead, an econometric approach, polls and previous studies on social migration and what people want from their government, are taken into account. However, as the Bertelsmann foundation has a reputation for supply-side economics, many of the recommendations made are based on concepts many would label neo-liberal or classical/neo-classical, calling for more reforms in the labour market, and stricter budget policies or social security reforms that put more pressure on beneficiaries (Rötzer 2004).

The latest report of 2007 no longer comprises the two indices Activity Index and Success Index. Instead, the results of the sub-rankings in the three areas of the former Activity Index are disclosed. The authors state that this is done to draw more attention to the analysis of the 16 regions and the recommendations. Therefore, the report includes the profiles for all 16 Bundesländer analysed with an overview of the relative performance, current trends, possible explanations and recommendations.

### *Analysis*

To get an impression on the predictive quality of the two indices, we looked at the relation between the ranking results of the 2001 report, covering the 1995 to 1998 period and the average regional GDP growth of the German Bundesländer from 1999 to 2007.

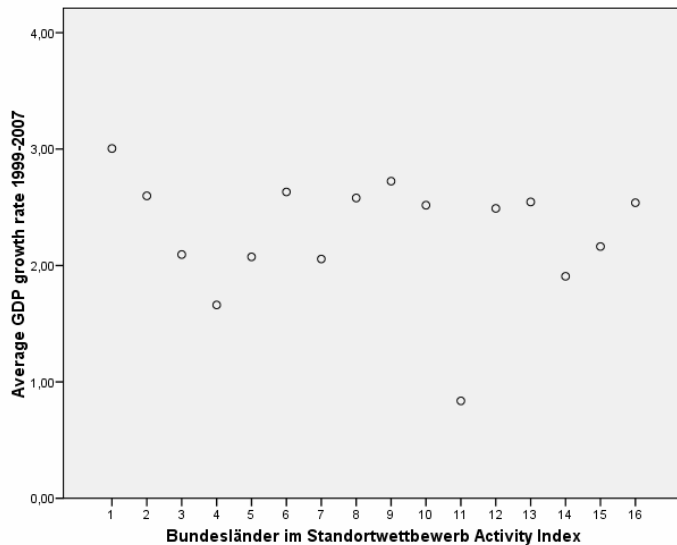


Source: BISW 2001; Statistisches Bundesamt

**Figure 4: BISW SI ranking results vs. future growth**

It can be seen that there is a negative tendency between the ranks and future GDP growth with some outliers. This can be verified with the Spearman rank correlation of  $-.541$ , significant on the 5 per cent level.

For the Activity Index, the picture is different, as can be seen below.



Source: BISW 2001; Statistisches Bundesamt

**Figure 5: BISW AI ranking results vs. future growth**

Here, there seems to be no clear tendency. One would expect a negative tendency, indicating that regions with a higher rank grow at higher rates. Although the direction of the relation is negative, it is neither a strong correlation,  $-.215$ , nor significant.

		Average unemployment rate 1999-2007	Average employment change 1999-2007	Average real GDP pc growth rate 1999-2007	Average GDP growth rate 1999-2007
Rank Bundesländer im Standortwettbewerb Success Index	Correlation Coefficient	,776(**)	-,567(*)	0,329	-,541(*)
	Sig. (1-tailed)	0,000	0,011	0,106	0,015
	N	16	16	16	16
Rank Bundesländer im Standortwettbewerb Activity Index	Correlation Coefficient	,929(**)	-,501(*)	0,338	-,215
	Sig. (1-tailed)	0,000	0,024	0,100	0,212
	N	16	16	16	16
* . Correlation is significant at the 0.05 level (1-tailed).					
** . Correlation is significant at the 0.01 level (1-tailed).					

**Table 2: Spearman correlation for the BISW index**

When looking at the relationship to real GDP per capita growth, as shown above, the picture is different for both indices as the correlation then 'points' into the wrong direction with a weak positive correlation between the ranking results and future growth. The correlation with the unemployment rate is partly due to the fact that this variable forms a significant part of the index. We therefore included employment change. But even then, the correlation seems to verify the ranking results being significant for both indices.

In conclusion, the index offers a mixed picture for the predictive quality and a rather clear picture for employment and unemployment. The underlying econometric analysis as the basis for the weighting of the variables diverts attention from the need to explain why different weights are applied. But as the authors point out in the report, problems of causality and endogeneity still remain.

## Economic Freedom of North America (EFNA)

### *Background information*

This index is published by The Fraser Institute, Canada and the US-based National Center for Public Analysis, two private non-profit think tanks. It presents a comprehensive economic freedom ranking for US states and Canadian provinces. It is a report derived from the Economic Freedom of the World report series, measuring differences in economic freedom among the 10 Canadian provinces and 50 US states since 2002, with rankings stretching back to 1981.

The study comes up with two indices: The sub national index, measuring the impact of provincial and municipal governments in Canada and state and local governments in the United States and the all-government index, including the impact of all levels of government in Canada and the United States.

The assumption that economic freedom fosters economic well-being is supported with a number of econometric studies and an investigation of the Fraser Institute itself. Economic freedom is defined as follows: "Individuals have economic freedom when (a) property they acquire without the use of force, fraud, or theft is protected from physical invasions by others and (b) they are free to use, exchange, or give their property as long as their actions do not violate the identical rights of others." (Gwartney et al 1996: 12). Based on this definition, the report follows the following doctrine: "The freest economies operate with a minimal level of government interference, relying upon personal choice and markets to answer the basic economic questions such as what is to be produced, how it is to be produced, how much is

produced, and for whom production is intended. As government imposes restrictions on these choices, the level of economic freedom declines” (Gwartney et al 2001: 6).

The ranking consists of three areas which receive equal weights. Below these areas, the following nine variables are grouped:

Area	Variable	Weight
Size of government		33.33 %
	General consumption expenditures by government as a percentage of GDP	16.66 %
	Transfers and subsidies as a percentage of GDP	16.66 %
Takings and discriminatory taxation		33.33 %
	Government revenue from own source as a percentage of GDP	8.33 %
	Top marginal income tax rate and the income threshold at which it applies.	8.33 %
	Indirect taxes as a percentage of GDP	8.33 %
	Sales taxes collected as a percentage of GDP	8.33 %
Labor market freedom		33.33 %
	Minimum wage legislation	11.11 %
	Government employment as a percentage of total state/provincial employment	11.11 %
	Occupational licensing	11.11 %

**Table 3: Variables and weights applied for the EFNA index 2002**

There are no further explanations for these weights. The final score is computed by assigning scores from zero to ten for each variable. Then, the scores are averaged on the area level and finally on the index level to come with the final ranking.

The following table compares the 1999 results from the 2002 report with the 2003 results (as included as the latest figures in the 2006 report)<sup>1</sup>.

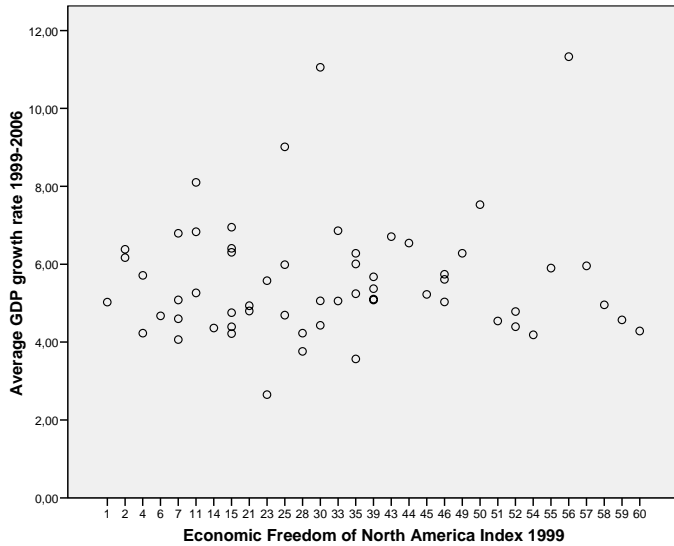
Region	1999 rank	2003 rank	Change	Region	1999 rank	2003 rank	Change
Alberta	30	9	21	Massachusetts	7	15	-8
British Columbia	55	52	3	Michigan	23	34	-11
Manitoba	58	56	2	Minnesota	30	37	-7
New Brunswick	54	54	0	Mississippi	28	30	-2
Newfoundland	56	54	2	Missouri	7	20	-13
Nova Scotia	52	53	-1	Montana	49	41	8
Ontario	51	47	4	Nebraska	21	15	6
Prince Edward Island	59	58	1	Nevada	11	9	2
Quebec	60	60	0	New Hampshire	6	5	1
Saskatchewan	57	58	-1	New Jersey	25	30	-5
Alabama	11	20	-9	New Mexico	44	47	-3
Alaska	50	44	6	New York	39	50	-11
Arizona	7	5	2	North Carolina	23	9	14
Arkansas	39	30	9	North Dakota	46	26	20
California	35	44	-9	Ohio	35	41	-6
Colorado	2	9	-7	Oklahoma	33	34	-1
Connecticut	14	26	-12	Oregon	35	41	-6
Delaware	2	1	1	Pennsylvania	15	23	-8
Florida	15	3	12	Rhode Island	46	47	-1
Georgia	7	9	-2	South Carolina	15	15	0
Hawaii	39	44	-5	South Dakota	4	5	-1
Idaho	43	34	9	Tennessee	1	2	-1
Illinois	15	20	-5	Texas	11	8	3
Indiana	4	14	-10	Utah	35	15	20
Iowa	33	26	7	Vermont	39	39	0
Kansas	21	23	-2	Virginia	15	3	12
Kentucky	28	30	-2	Washington	45	39	6
Louisiana	15	23	-8	West Virginia	52	56	-4
Maine	46	50	-4	Wisconsin	30	38	-8
Maryland	25	15	10	Wyoming	25	29	-4

**Table 4: Comparison of 1999 and 2003 ranking results of the EFNA index**

### *Analysis*

The analysis covers the index on the sub-national level as we wanted to compare regional rather than federal levels. We looked at the relation of the 1999 results as published in the 2002 report and average GDP growth from 1999 to 2006.

<sup>1</sup> All results are adjusted backwards if changes in the creation of the overall index may take place. Therefore the results taken from previous reports may be different from the results for the same year from a later report.



Source: EFNA 2002; Institut de la statistique du Québec; Bureau for Labor Statistics; Bureau of Economic Analysis

**Figure 6: EFNA ranking results vs. future growth**

The picture reveals no clear picture. The regions seem to be plotted randomly and this is exactly what the rank correlation analysis shows. Spearman's correlation coefficient for the ranking results and regional GDP growth rate is .009 and not significant.

		Average unemployment rate 1999-2006	Average real GDP pc growth rate 1999-2006	Average GDP growth rate 1999-2006
Rank Economic Freedom of North America Index 1999	Correlation Coefficient	,454(**)	,235(*)	0,009
	Sig. (1-tailed)	0,000	0,036	0,473
	N	60	60	60
**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).				

**Table 3: Spearman correlation for the EFNA**

The picture does not change when looking at real GDP per capita of the 1999 to 2006 period. Here, the ranking results are even significantly correlated on the five per cent level with a correlation coefficient of .235. This means the better – ergo the lower – the rank, the lower average GPD per capita growth. The same holds true for the relation with average unemployment. The analysis came up with a significant correlation of .454 on the one per cent level. In conclusion, the overall predictive quality of the ranking can be questioned.

The State New Economy Index (SNEI)

*Background information*

The SNEI was first published in 1999 by the Progressive Policy Institute (PPI). The second edition in 2002 was also published by the PPI before one of the authors left the organisation and joined the Kauffman Foundation. The 2007 edition was published by the Kauffman and The Information Technology and Innovation Foundation, both private US non-profit organisations.

The aim according to the web-site is to examine “the degree to which state economies are knowledge-based, globalized, entrepreneurial, information technology-driven and innovation-based” (Kauffman 2007). The New Economy then is seen as a “global, entrepreneurial and knowledge-based economy in which the keys to success lie in the extent to which knowledge, technology, and innovation are embedded in products and services” (Atkinson 2007: 3). No other theoretical approach as the basis for the index is stated.

To reflect this approach, 26 indicators were chosen. In addition, these were weighted “according to their relative importance and so that closely correlated indicators do not bias the results” (Atkinson 2007: 73). More details are not disclosed. The list of variables is stated below:

<b>Knowledge Jobs</b>	4.5
IT Professionals	0.75
Managerial, Professional, Technical Jobs	0.75
Workforce Education	1.00
Immigration of Knowledge Workers	0.50
Manufacturing Value-Added	0.75
High-Wage Traded Services	0.75
<b>Globalization</b>	2.5
Export Focus of Manufacturing and Services	1.00
Foreign Direct Investment	1.00
Package Exports	0.50
<b>Economic Dynamism</b>	4.25
“Gazelle Jobs”	1
Job Churning	0.75
Fastest Growing Firms	0.50
IPOs	0.75
Entrepreneurial Activity	0.75
Inventor Patents	0.50
<b>Digital Economy</b>	3.85
Online Population	0.70
Internet Domain Names	0.60
Technology in Schools	0.50
E-Gov’t	0.50
Online Agriculture	0.50
Broadband Telecommunications	1.00
<b>Innovation Capacity</b>	4.00
High-Tech Jobs	0.75
Scientists and Engineers	0.75
Patents	0.75
Industry Investment in R&D	1.00
Venture Capital	0.75

**Table 5: Variables of the State New Economy Index 2007**

The raw scores are normalised with the help of standard deviations and the national mean. Then, ten points are added to all scores, the scores are summed up to the sub-ranking, multiplied with their weight assigned. The five sub-rankings are then summed-up again, taking into account the different weights. The final score is expressed in relation to the sum of the highest scores achieved in each category.

Below are the ranking results for 1999 and 2007:

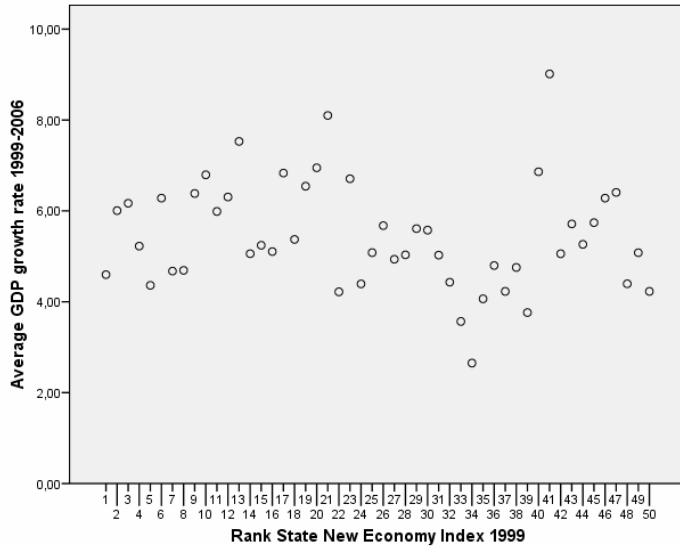
State	Rank 1999	Rank 2007	Change
Alabama	44	46	-2
Alaska	13	13	0
Arizona	10	22	-12
Arkansas	49	47	2
California	2	5	-3
Colorado	3	9	-6
Connecticut	5	6	-1
Delaware	9	7	2
Florida	20	23	-3

Georgia	25	18	7
Hawaii	26	41	-15
Idaho	23	24	-1
Illinois	22	16	6
Indiana	37	31	6
Iowa	42	38	4
Kansas	27	34	-7
Kentucky	39	45	-6
Louisiana	47	44	3
Maine	28	32	-4
Maryland	11	3	8
Massachusetts	1	1	0
Michigan	34	19	15
Minnesota	14	11	3
Mississippi	50	49	1
Missouri	35	35	0
Montana	46	42	4
Nebraska	36	28	8
Nevada	21	27	-6
New Hampshire	7	13	-6
New Jersey	8	2	6
New Mexico	19	33	-14
New York	16	10	6
North Carolina	30	26	4
North Dakota	45	37	8
Ohio	33	29	4
Oklahoma	40	40	0
Oregon	15	17	-2
Pennsylvania	24	21	3
Rhode Island	29	15	14
South Carolina	38	39	-1
South Dakota	43	48	-5
Tennessee	31	36	-5
Texas	17	14	3
Utah	6	12	-6
Vermont	18	20	-2
Virginia	12	8	4
Washington	4	4	0
West Virginia	48	50	-2
Wisconsin	32	30	2
Wyoming	41	43	-2

**Table 6: Comparison of ranking results for 1999 and 2007 of the SNEI**

### *Analysis*

The analysis builds on the 1999 ranking results and looked at how they relate to GDP growth over the period of 1999 to 2006.



Source: SNE 2002; Bureau for Labor Statistics; Bureau of Economic Analysis

**Figure 7: SNEI ranking results vs. future growth**

No clear tendency can be taken from the figure, but a look at the Spearman rank correlation shows that there is a slightly non-significant negative correlation of  $-0.189$  between the ranking results and GDP growth. The same is true for the correlation of ranking results and real GDP per capita growth ( $-0.191$ ). When looking at unemployment, the correlation is next to zero ( $.026$ ) and non-significant.

		Average unemployment rate 1999-2006	Average real GDP pc growth rate 1999-2006	Average GDP growth rate 1999-2006
Rank State New Economy Index 1999	Correlation Coefficient	0,026	-0,191	-0,189
	Sig. (1-tailed)	0,428	0,092	0,094
	N	50	50	50

**Table 4: Spearman correlation for the SNEI**

Interestingly, the results above do match with the findings in the report. The authors found a correlation of  $0.44$  for ranking results and state per capita income between 1999 and 2005. This is in line with our findings, although our correlation is weaker. Unfortunately there is no information on the significance of that correlation. In general, the SNEI is a relative narrow index concentrating on growth factors like IT, high-tech, high-skill and patents. It can therefore seen as an index of the ability to innovate.

## State Competitiveness Report (SCR)

### *Background information*

The Beacon Hill Institute at Suffolk University in Boston first published the “State Competitiveness Report” in 2001. It was later renamed the “Metro Area and State Competitiveness Report” as since 2002 it also includes a ranking of the 50 largest metropolitan areas. The annual report includes a comparison of different reports with respect to the number of variables and areas covered.

In the view of the editors, “a state is competitive if it has in place the policies and conditions that ensure and sustain a high level of per capita income and its continued growth. To achieve this, a state needs to be able to attract and incubate new businesses, and to provide an environment that is conducive to the growth of existing firms” (Haughton/Slobodynanyuk 2001: 5). This stresses out the view of competitiveness as an aggregate of microeconomic firm performance limited by the business environment. Here, the report claims that they are inspired by Porter’s view as expressed in the Global Competitiveness Report (see Porter 2000).

The following table lists all variables included in the ranking with the assumed influence on regional competitiveness being negative (-) or positive (+).

Government and Fiscal Policy	State and local taxes per capita /income per capita(-)
	Workers' compensation premium rates (-)
	Bond rating (composite of S&P's and Moody's, scale 1-25) (+)
	Budget surplus as % of Gross State Product (+)
	Average benefit per first payment for unemployed (-)
	Full-time-equivalent state and local government employees per 100 residents (-)
Security	Crime index per 100,000 inhabitants (-)
	% Change in crime index, 2005-2006 (-)
	Murders index per 100,000 inhabitants (-)
	The BGA Integrity Index (+)
Infrastructure	% of households with installed phones (+)
	High-speed lines per 1000 (+)
	Air passengers per capita (+)
	Travel time to work (-)
	Electricity prices per million BTU (-)
	Median monthly housing costs (-)
Human Resources	% of population without health insurance (-)
	% of population aged 25 and over that graduated from high school (+)
	Unemployment rate, not seasonally adjusted (-)
	% of students enrolled in degree-granting institutions per 1000 (+)
	% of adults in the labor force (+)
	Infant mortality rate in deaths per 1,000 live births (-)
	Non-federal physicians per 100,000 inhabitants (+)
% of students at or above proficient in mathematics, Grade 4 public schools (+)	
Technology	Academic R&D per \$1,000 GSP (+)
	NIH support to institutions in the state, per capita (+)
	Patents per 100,000 inhabitants (+)
	Science and engineering graduate students per 100,000 inhabitants (+)
	Science and engineering degrees awarded per 100,000 inhabitants (+)
	Scientists and engineers as % of labor force (+)
	% of total wage and salary jobs in high technology industries(+)
Business Incubation	Deposits in commercial banks and savings institutions, per capita (+)
	Venture capital available per capita (+)
	Employer firm births per 100,000 inhabitants (+)
	IPO (A weighted measure of the value and number of initial public Stock offerings of companies as a share of Gross State Product) (+)
	% of labor force that is represented by unions (-)
	Minimum wage (-)
Openness	Exports per capita, \$ (+)
	Incoming foreign direct investment per capita, \$ (+)
	% of population born abroad (+)
Environmental policy	Toxic release inventory, pounds/1000 sq. miles (-)
	Carbon emission per 1000 sq miles (-)

**Table 7: Variables included in the SCR 2007**

To be able to compare the different results, each variable was normalised to the mean of five and the standard deviation of one. The range then was set from zero (worst) to ten (best). This was also done on the sub-rankings and overall ranking. The ranking results then represent the simple average of the eight sub-rankings and these in turn the average of the respective number of variables. This means the variables implicitly receive different weights, ranging from 1.56 % for variables in the area of human resource and 6.25 % in the area of environmental policy.

The results of the 2001 and the 2007 report are compared below.

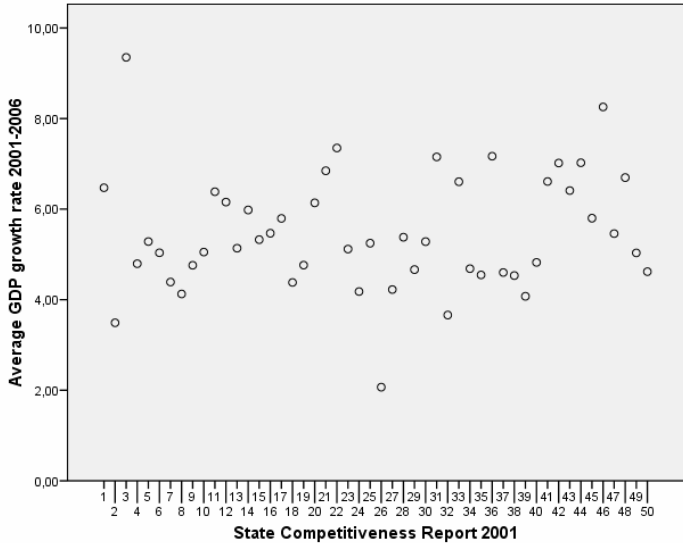
US state	Rank 2001	Rank 2007	Change
Alabama	45	48	-3
Alaska	22	13	9
Arizona	41	19	22
Arkansas	47	46	1
California	10	24	-14
Colorado	6	3	3
Connecticut	8	25	-17
Delaware	1	27	-26
Florida	36	33	3
Georgia	35	31	4
Hawaii	43	40	3
Idaho	12	5	7
Illinois	39	36	3
Indiana	27	44	-17
Iowa	16	18	-2
Kansas	23	17	6
Kentucky	38	39	-1
Louisiana	48	50	-2
Maine	19	35	-16
Maryland	20	23	-3
Massachusetts	2	2	0
Michigan	26	41	-15
Minnesota	9	6	3
Mississippi	50	49	1
Missouri	24	26	-2
Montana	31	15	16
Nebraska	15	11	4
Nevada	46	28	18
New Hampshire	7	9	-2
New Jersey	29	43	-14
New Mexico	42	29	13
New York	34	38	-4
North Carolina	28	30	-2
North Dakota	21	4	17
Ohio	32	45	-13
Oklahoma	44	32	12
Oregon	13	14	-1
Pennsylvania	37	34	3
Rhode Island	25	21	4
South Carolina	40	42	-2
South Dakota	17	8	9
Tennessee	30	37	-7
Texas	33	20	13
Utah	11	1	10
Vermont	5	12	-7
Virginia	14	16	-2
Washington	4	7	-3
West Virginia	49	47	2
Wisconsin	18	22	-4
Wyoming	3	10	-7

**Table 8: Comparison of ranking results for 2001 and 2007 of the SCR**

The report includes detailed tables for all states in the form of a SWOT analysis with advantages on the left and disadvantages on the right. Under these two headings, all sub-ranking results and the rank in all the variables are listed.

*Analysis*

The analysis was based on the 2001 results and looked at the relation with average GDP growth between 2001 and 2006.



Source: SCR 2001; Bureau for Labor Statistics; Bureau of Economic Analysis

**Figure 8: SCR ranking results vs. future growth**

The figure shows no clear tendency for the two variables, which is further verified after looking at the Spearman rank correlation. The correlation coefficient is .126 and not significant meaning there is no relation between the 2001 ranking results and GDP growth over the then following six years.

		Average unemployment rate 2001-2006	Average real GDP pc growth rate 2001-2006	Average GDP growth rate 2001-2006
Rank State Competitiveness Report 2001	Correlation Coefficient	,360(**)	-0,028	0,126
	Sig. (1-tailed)	0,005	0,425	0,192
	N	50	50	50
**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).				

**Table 5: Spearman correlation for the SCR**

This first impression changes a bit when looking at real GPD per capita growth for the respective period. Here, the correlation is negative, but very weak with just -.028. Again,

there proves to be no correlation between the ranking result and GDP per capita for the period analysed. When we tested against unemployment, the result was more promising. The correlation was not only significant on the 1 per cent level but also positive and with 0.36 not that weak. Here, the ranking results may be used as a proxy.

## Small Business Survival Index (SBSI)

### *Background information*

The Small Business Survival Index was developed in 1986 and is updated annually. It is published by the Small Business and Entrepreneurship Council (SBEC), a US-based non-profit lobbying organisation with a record of publishing the SBSI since 1986. It is a business climate ranking especially designed to capture the climate for entrepreneurship and the development of small businesses in the states. According to the web site, the SBEC's aim is to influence "legislation and public policy to enhance the environment for business start-up and growth." Therefore, the SBEC also produces a Business Tax Index which is based on the nearly the same sources as the SBSI.

There is no specific theoretical framework as the basis for the SBSI but the notion that "the "Small Business Survival Index" tries to make clear the relative governmental burdens placed on entrepreneurship among the states, so that business owners and their employees, elected officials and citizens in general can better grasp the competitive position of their respective states" (Keating 2007: 23).

The index is derived by adding up the results of 31 variables. The authors do not apply weights when aggregating the final score, but this is only true if one looks at the final weighting: eight variables are binomially, i.e. states receive a zero or one. This means the raw numbers have very different ranges. This puts implicitly weight on those variables that have wide ranges as the raw numbers enter into the final index without any correction or normalisation. The variables are shown below.

State's top personal income tax rate
State's top capital gains tax rate on individuals
State's top corporate income tax rate
State's top capital gains tax rate on corporations
Additional income tax imposed on S-Corporations beyond the top personal income tax rate
State individual alternative minimum tax (states imposing an individual AMT receive a score of "1" and states that do not receive a score of "0")
State corporate alternative minimum tax (states imposing an individual AMT receive a score of "1" and states that do not receive a score of "0")
State indexing of personal income tax rates (states indexing their personal income tax rates receive a score of "0" and states that do not receive a score of "1")
State and local property taxes (property taxes as a share of personal income)
State and local sales, gross receipts and excise taxes (sales, gross receipts and excise taxes [less revenues from gas taxes, since gas tax rates are singled out in the Index] as a share of personal income)
State death taxes (states levying estate or inheritance taxes receive a score of "1" and states that do not receive a score of "0")
Unemployment tax rate is adjusted as follows: maximum state tax rate applied to state unemployment tax wage base, with that amount as a share of the state average wage
States providing HSA tax benefit or imposing no personal income tax receive a "0", while states that offer partial benefits receive "0.5" and those not conforming receive a score of "1."
State mandate for guaranteed issue in the self-employed group of one market (state imposing guaranteed issue gets a score of "1" and states not imposing gets a score of "0").
State mandate for community rating in the small group market (state imposing rate bands gets a score of "0.33"; state imposing adjusted community rating gets a score of "0.66"; state imposing pure community rating gets a score of "1"; and a state not imposing community rating gets a score of "0").
Number of mandates imposed (state gets a score of 0.05 for each mandate imposed)
State's electricity cost index (index of state's average revenue per kilowatthour for electricity utilities)
Survival Index: state workers' compensation benefits per \$100 of covered wages
State's crime rate per 100 residents
Right-to-work status (non-right-to-work states receive a score of "1," while right-to-work states receive a score of "0")
State and local government employees (full-time equivalent employees per 100 residents)
Tax limitation status (states without some form of tax limitation check receive a score of "1," and states with some kind of tax limitation check receive a score of "0").
Internet access tax (states without such a sales access tax score "0," and states with such taxes score "1")
State gas tax (dollars per gallon)
State minimum wage minus the federal minimum wage
State liability score (mean grades based on survey of corporations to assess the fairness and reasonableness of state liability systems in eight key areas).
Regulatory flexibility legislation status (score of "0" for states with full and active regulatory flexibility statutes, a score of "0.5" for states with partial or partially used regulatory flexibility statutes, and a score of "1" for no regulatory flexibility statutes).
Index of the latest five-year growth rate in per capita state and local government expenditures
Index of per capita state and local government expenditures
Score based on grades for eminent domain reform legislation (ranging from "0.3" for an A+ to "3.9" for an F.)
Score is based on an assigned score of "0.05" for the state's cost effectiveness ranking – so the best state receives a score of "0.05" and the worst receives "2.50."

**Table 9: Variables included in the 2007 SBSI**

As can be seen, the index is heavily focused on tax and regulation issues with 8 variables taken from the 2007 state tax handbook. In this sense, it is strictly supply-sided and the SBEC lobbies heavily for its members with the help of the index. Taxes are therefore only seen negatively. This heavily criticised by Fisher (2005) as this view totally neglects that some of the services provided by the public such as teachers or professors of are not simply a waste of money. But it could be said that the SBSI is no general measure of the overall

business climate as it simply focuses on entrepreneurship and small businesses. Then, the debate has to focus on what really counts for entrepreneurs. To conclude with Fisher (2005: 10): “It is clear that the selection of index measures was guided largely by the SBEC’s ideological stance: anti-government, anti-tax, anti-regulation. The index does not appear to rely on research regarding the effects of public policies on small business formation, innovation, or growth.” In the following table, the 1999 results are compared to the 2007 findings.

US state	Rank 1999	Rank 2007	Change
Alabama	8	10	-2
Alaska	11	17	-6
Arizona	32	15	17
Arkansas	35	27	8
California	41	49	-8
Colorado	13	11	2
Connecticut	29	38	-9
Delaware	25	32	-7
District of Columbia	51	51	0
Florida	7	5	2
Georgia	27	12	15
Hawaii	50	42	8
Idaho	28	36	-8
Illinois	20	26	-6
Indiana	16	14	2
Iowa	36	41	-5
Kansas	40	30	10
Kentucky	22	22	0
Louisiana	19	31	-12
Maine	42	47	-5
Maryland	24	28	-4
Massachusetts	30	44	-14
Michigan	21	6	15
Minnesota	44	45	-1
Mississippi	10	16	-6
Missouri	15	19	-4
Montana	37	35	2
Nebraska	33	37	-4
Nevada	3	2	1
New Hampshire	4	23	-19
New Jersey	45	50	-5
New Mexico	48	25	23
New York	47	46	1
North Carolina	39	39	0
North Dakota	12	20	-8
Ohio	43	29	14
Oklahoma	34	21	13
Oregon	46	34	12
Pennsylvania	14	24	-10
Rhode Island	49	48	1

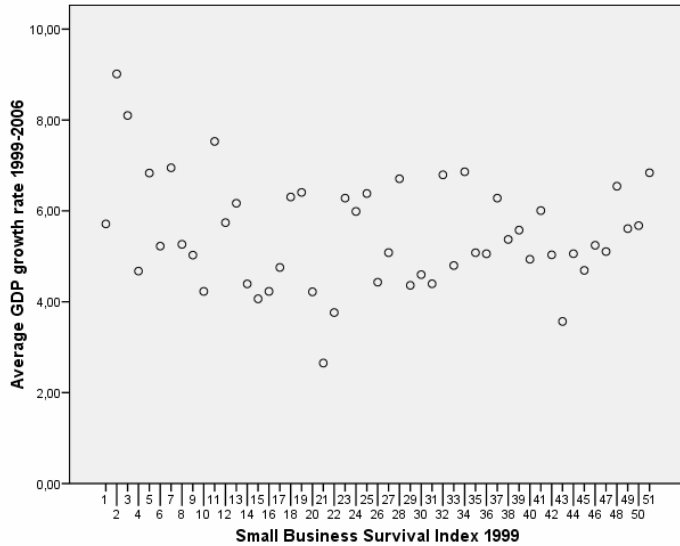
South Carolina	17	8	9
South Dakota	1	1	0
Tennessee	9	13	-4
Texas	5	7	-2
Utah	23	18	5
Vermont	38	43	-5
Virginia	18	9	9
Washington	6	4	2
West Virginia	31	40	-9
Wisconsin	26	33	-7
Wyoming	2	3	-1

**Table 10: Comparison of ranking results for 2001 and 2007 of the SBSI**

### *Analysis*

Before discussing the results of the analysis, it must be noted, that the SBSI is not fully comparable with other indices of regional performance. This is due to the fact that it is focused on the burdens for entrepreneurs and small businesses and not with regional performance in general. Nevertheless it is stated that “Ever-mounting burdens placed on entrepreneurs and small businesses by government negatively affect economic opportunity” (Keating 2007: 23) which means a poor performance could be traced back to the burdens for entrepreneurs and small businesses. Therefore, a look at the correlations with growth should help evaluating the SBSI.

The picture for the relation of the 1999 ranking and GDP growth over the period of 1999 to 2006 is not very promising with a very slight negative correlation of  $-0.073$ . As this correlation is very weak and even not significant, it seems the ranking results do not predict future growth.



Source: SBSI 1999; Bureau for Labor Statistics; Bureau of Economic Analysis

**Figure 9: SBSI ranking results vs. future growth**

When looking at the Spearman rank correlation with GDP per capita growth over the eight year period, the 'direction' of the correlation changes and now the ranking results are positively correlated with growth, with a coefficient of .332 being even significant on the one per cent level. This means the more entrepreneur-friendly a state, the lower average real GDP per capita growth for the period analysed, according to these findings. The question then is if this is due to the analysis, the wrong variables included in the index or due to the fact that such burdens simply do not matter?

		Average unemployment rate 1999-2006	Average real GDP pc growth rate 1999-2006	Average GDP growth rate 1999-2006
Rank Small Business Survival Index 1999	Correlation Coefficient	0,066	,332(**)	-0,073
	Sig. (1-tailed)	0,322	0,009	0,305
	N	51	51	51
**. Correlation is significant at the 0.01 level (1-tailed).				

**Table 6: Spearman correlation of SBSI**

Despite the discussion on whether the variables selected are meaningful and really reflect what counts for entrepreneurs or if entrepreneurs look at prospects, not burdens, the index creation itself is the most important weakness. As the raw numbers are not normalised, a few outliers may influence the overall ranking heavily.

#### 4. Comparison of results

In addition to the analysis of single indices, a comparison of the ranking results for the US states is included, as shown below. It can be seen that the results vary heavily, which is in line with the findings of Fisher (2005). Below is a comparison of the ranking results for the US states, based on the 2002 findings.

US States	EF NA 2002	SNEI 2002	SCR 2002	SBSI 2002	Average absolute rank	Average relative position	Range relative position (PP)
Alabama	17	47	42	10	29,0	44,1%	74,4
Alaska	43	31	34	21	32,3	37,7%	44,8
Arizona	4	16	42	20	20,5	61,2%	76,0
Arkansas	32	48	49	24	38,3	25,7%	50,9
California	43	3	16	46	27,0	48,4%	84,2
Colorado	9	4	4	12	7,3	87,6%	15,6
Connecticut	23	7	5	33	17,0	68,3%	54,7
Delaware	1	9	1	23	8,5	85,2%	43,1
District of Columbia				51			
Florida	3	18	39	5	16,3	69,5%	72,0
Georgia	9	22	40	22	23,3	55,7%	62,0
Hawaii	43	35	45	50	43,3	16,0%	28,1
Idaho	32	20	11	28	22,8	56,8%	42,0
Illinois	21	17	33	13	21,0	60,1%	40,5
Indiana	12	36	20	15	20,8	60,6%	48,0
Iowa	23	38	12	44	29,3	43,9%	62,3
Kansas	21	29	14	32	24,0	54,3%	34,8
Kentucky	29	42	37	29	34,3	33,8%	27,1
Louisiana	23	45	47	18	33,3	35,7%	58,7
Maine	47	25	24	49	36,3	30,0%	48,1
Maryland	17	5	19	25	16,5	69,2%	39,1
Massachusetts	17	1	2	30	12,5	77,3%	56,9
Michigan	29	23	30	11	23,3	55,6%	38,4
Minnesota	35	13	9	48	26,3	50,0%	76,2
Mississippi	32	49	50	9	35,0	32,1%	82,3
Missouri	17	24	20	19	20,0	62,2%	14,0
Montana	40	37	31	38	36,5	29,4%	18,0
Nebraska	14	33	17	34	24,5	53,3%	38,7
Nevada	9	32	46	2	22,3	57,5%	88,0
New Hampshire	4	15	8	6	8,3	85,5%	22,0
New Jersey	29	6	26	39	25,0	52,4%	64,5
New Mexico	43	27	41	47	39,5	23,5%	38,2
New York	47	10	32	43	33,0	36,4%	74,0
North Carolina	12	26	35	37	27,5	47,4%	48,6
North Dakota	27	44	18	35	31,0	40,3%	52,0
Ohio	40	30	36	40	36,5	29,4%	20,0
Oklahoma	35	34	44	26	34,8	32,7%	37,0
Oregon	40	11	10	36	24,3	53,8%	60,0
Pennsylvania	23	19	27	17	21,5	59,2%	20,6
Rhode Island	47	21	29	45	35,5	31,4%	52,0
South Carolina	14	41	38	16	27,3	47,6%	54,0
South Dakota	7	43	23	1	18,5	65,0%	84,0
Tennessee	2	39	22	7	17,5	67,1%	74,0
Texas	8	14	28	4	13,5	75,0%	48,1
Utah	14	12	13	27	16,5	69,3%	29,0
Vermont	38	28	7	42	28,8	44,9%	68,4
Virginia	4	8	15	14	10,3	81,6%	22,0
Washington	38	2	3	8	12,8	76,6%	72,0
West Virginia	50	50	48	41	47,3	7,9%	19,6
Wisconsin	37	40	25	31	33,3	35,8%	30,0
Wyoming	27	46	6	3	20,5	61,0%	86,1
No of entities:	50	50	50	51	Average range		49,9

**Table 7: Comparison of ranking results for the US states**

On average, the range for the ranks in one of the four indices is around 50 percentage points with some states like Missouri or Colorado with a relatively narrow range and other states like Wyoming, South Dakota, California or Mississippi with a wide range. This is not to ignore the different concepts and aims of the indices but just to give an impression how different ranking attempts may come up with very different ranking results.

## **5. Conclusion**

In conclusion, our analysis indicates firstly, that regional competitiveness indices lack commonality in the variables they include and the approach they take to index construction, weighting and aggregation. This is perhaps not surprising given the absence of a coherent competitiveness framework capable of providing appropriate guidance on the selection of appropriate variables, their relative weights and their inter-relationships. As a consequence, index crafters rely very heavily on expert judgement and ad hoc empirical analysis (see also Rouvinen, 2001). Regional competitiveness is deemed to be a complex concept which embraces not only a region's potential to export or perform well in macroeconomic terms, but also reflects the productivity of the region's firms and the characteristics of the business environment. Indeed, in becoming broader and wider competitiveness indices appear to be turning into catch-all barometers of the business climate, and thus of more use and appeal to the business community.

Secondly, regional competitiveness indices perform poorly in terms of their ability to predict and rank national economic performance, with the observed correlations between GDP per capita growth and rankings being variable at best, and at worst very weak. Results for the US states vary widely and while the predictive quality of some indices is reasonably good (e.g. the UK Competitiveness Index), others are very poor (e.g. the Economic Freedom of North America Index).

This reflects a series of observed methodological and quantitative weaknesses which lie at the heart of these indices (see also Lall, 2001). The two major problems lie with the selection of indicators and the method of aggregation into one single value, i.e. the weighting of the indicators. The majority of indices use a uniform weighting at least on the sub-index level and often implicitly a non-uniform weighting below the sub-index level as these sub-indices consist of different numbers of indicators, thus signing different weights to the indicators used implicitly.

The value of such indices is therefore questionable beyond their purpose in reminding us of the continued success of particular regions and the continued paucity of others and thus encouraging policy-makers to indulge in place promotion (Greene et al, 2007). They do not provide an effective diagnostic tool for policy-makers seeking to understand how to improve their economic performance through appropriate remedial action. Neither do composite rankings illuminate the scale of deficiencies in key indicators relative to comparators. Rather their value can be construed as being of more symbolic than tangible importance. They help elucidate a kind of revealed competitiveness or a perceived level of performance on an agreed set of proxy indicators, and this ultimately appears to matter more to policy-makers and business investors than their ability to accurately measure actual economic performance and provide clear guidance as to how the elusive notion of competitiveness can be achieved. They do help business decision-makers to gain an overview of a region's characteristics, although it is questionable if league tables and rankings are necessary for this. It is the desire for the benchmarking of regions against a broad, comparable yet loose set of proxy indicators of economic performance and the business environment that explains their continued attractiveness.

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