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Article

Institutions and Growth in OECD Countries

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INSTITUTIONS AND GROWTH IN OECD COUNTRIES

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The institutional characteristics of economies affect economic growth. Economists and policy makers alike are interested in the specific institutional determinants that best foster growth. In 2007, the Ifo Institute for Economic Research in Munich developed an Institutions Climate Index that assesses institutional quality across OECD countries and its relationship to economic growth. This article highlights some important developments that have come to light after the most recent update of the index. The index is used to understand the institutional drivers that affect countries growth prospects. We have found that the index's ability to track growth is undiminished. At the country level we have examined the drivers of the recent decline in the OECD institutions climate and identified countries that have advanced and declined in recent years in the institutions ranking. (For detailed results and the complete dataset, the interested reader is referred to the CESifo DICE Database [see Box].)

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¹ The four-year moving average of GDP per capita growth has been chosen to filter out business cycle fluctuations.

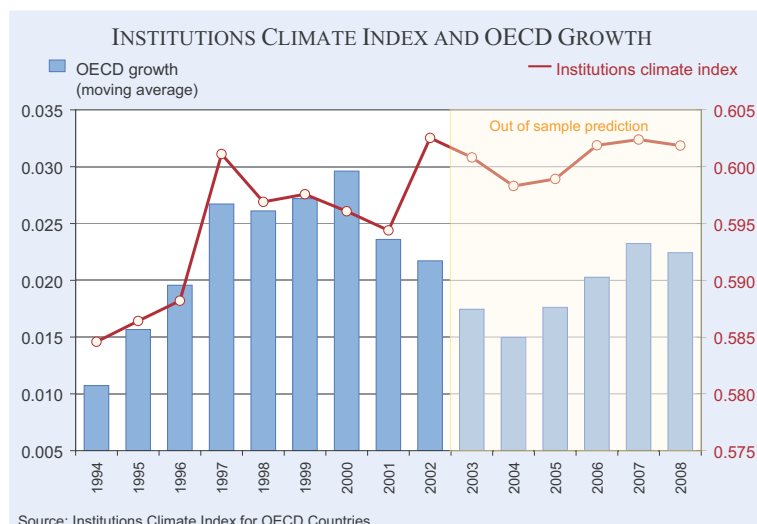
² One exception to the synchronous development is given in 2002. Whereas the index increased sharply between 2001 and 2002, economic growth deteriorated. The increase in the index is due to the increase in the sub-index Trade Openness. The sub-index 2002 refers to the quality of institutions in 2000. At that time the introduction of the euro removed some of the barriers for Intra-European trade. The euro, however, did not stimulate economic growth to the same extent. From 2002 on the index and economic growth developed in a parallel manner.

The institutional climate and economic growth

The Ifo Institution Climate Index was created with the express intent of highlighting the key underlying variables that determine economic per capita growth in OECD countries. Since establishing the Institutions Climate Index, the Ifo Institute has maintained its interest in analysing how well the index tracks economic growth across OECD countries. Figure 1 shows the relationship between the Institutions Climate Index (right scale) and the four-year moving average of OECD per capita GDP growth (left scale).¹ The Institutions Climate Index is based on two-year lagged and five-year averaged institutional indicators. Thus the value of the index in 2008, e.g., is based on institutional indicators for the years 2002–06 averaged over the 24 OECD countries in our sample.

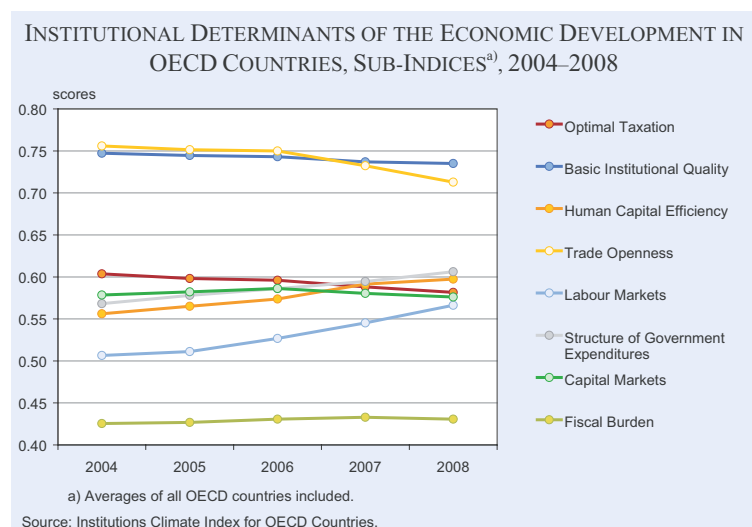
Figure 1 highlights how well the institutional performance of OECD countries predicts OECD growth.² That is, the variation in lagged institutional quality seems to be closely related to the rise and fall of current growth observed across OECD countries. The performance of the index is especially surprising since the calibration of the index weights is based on three cross sections only (1994, 1998 and 2002), implying six years of out of sample prediction. (For details, see Eicher and Röhn [2007] and Box.)

Figure 1



Source: Institutions Climate Index for OECD Countries.

Figure 2



Institutional determinants of the recent economic development

Even at the aggregate OECD level the magnitude of annual variation in institutions is surprising. This section analyses the overall OECD index and focuses on the underlying institutional sub-indices and their components that were responsible for the aggregate movements in the index. We focus on the period from 2004 to 2008, which highlights changes incorporated in our recent update. Interestingly, both institutions and growth saw an upswing post-2004 followed by a decline in 2008.

Disaggregating the index in Figure 1 into its sub-indices, Figure 2 highlights that the upswing in the Institutions Index (and economic growth) has been largely due to improvements in Human Capital Efficiency, Labour Markets and the Structure of Government Expenditures (Eicher et al. 2008). The downturn of the index has been driven by the decline in openness and an unfavourable tax environment. Openness declined mostly due to trade in goods, but capital market concerns have also become apparent since 2007.

In analysing the trends of individual components, we find that the increase in Human Capital Efficiency is primarily due to increases in *tertiary gross enrol-*

ment. Other factors that are also relevant include longer *school time* and increased *public educational expenditures*. Labour market reforms are driven by improvements in *labour market regulations*, increased *female labour participation* and reductions in *early retirement*. Finally, the scope of state control in the private sector as measured by *government enterprises and investment* has been reduced, which has resulted in better measures of the Structure of Government Expenditures. It is notable that this effect was sufficiently strong to overcome the drag on the Structure of

Government Expenditures that was imposed by a worsening of *public consumption* (see Figure 3).

As indicated above, the institutional quality did not improve in all areas, however. In 2008 declining components dominated to cause a reduction in the Institutions Climate Index. Figure 2 indicates that the Optimal Taxation performed badly, and the same has been true for Trade Openness since 2006. Figure 4 lists the components of the declining institutional characteristics to highlight that the sharp deterioration in Trade Openness is driven by both a reduction in openness as measured by tariff levels and also by a reduction in the trade volumes. According to the *Economic Freedom of the World* (2008) of the Fraser Institute, which is our source for Trade Openness, the increase in *tariffs* was due to a sharp rise of *mean tariff rates* and of *standard deviations in the country's tariff*

Figure 3

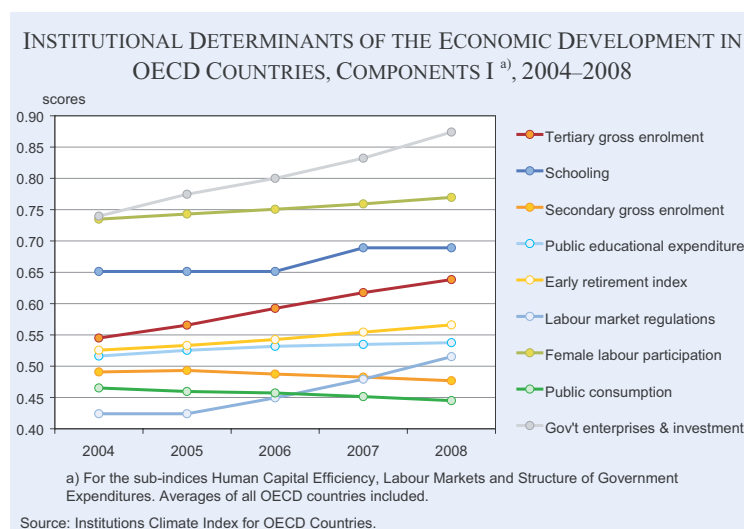
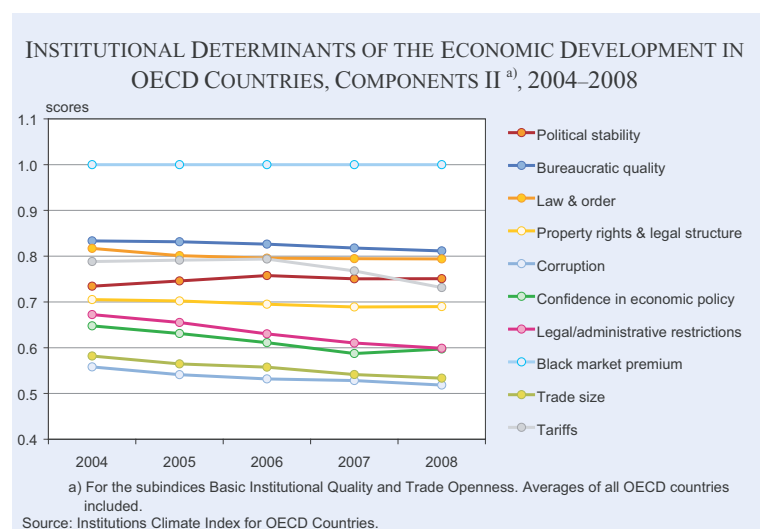


Figure 4



sured by the actual size of the trade sector relative to the expected size. The expected size is an estimation based on the population and geographic size of a country and its location relative to the concentration of the world GDP. *Trade size* diminished mainly in Canada, Greece, Ireland and New Zealand.

Ranking of countries by their institutional climate in 2008

In this section we disaggregate the overall OECD index to the individual country level. Table 1

rates whereas the third sub-component (*revenues of taxes from international trade*) did not increase. The rise of *tariffs* took mainly place in South Korea, Japan, Switzerland, Norway and Canada. *Trade size* is mea-

displays the individual country rankings for the Institutions Climate Index from 1994–08. In 2008 Australia, Canada, the United States and Finland were the most successful countries. Fourteen years

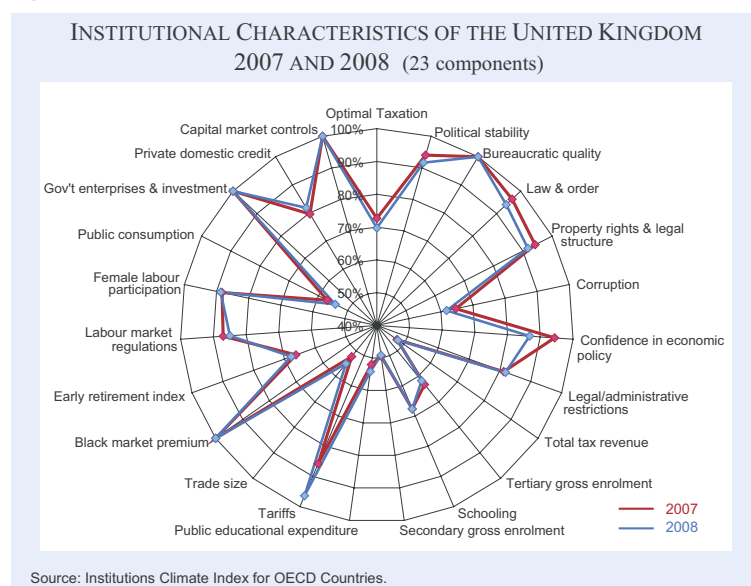
Table 1

Country rankings

Rank	1994		2006		2007		2008	
	Country	Index score	Country	Index score	Country	Index score	Country	Index score
1	United States	0.688	Australia	0.703	Australia	0.706	Australia	0.703
2	Japan	0.678	Canada	0.668	Canada	0.663	Canada	0.657
3	Switzerland	0.652	United States	0.661	United States	0.658	United States	0.654
4	Canada	0.650	United Kingdom	0.657	United Kingdom	0.653	Finland	0.650
5	Ireland	0.628	Netherlands	0.654	Netherlands	0.652	New Zealand	0.648
6	United Kingdom	0.628	Ireland	0.647	Ireland	0.648	Denmark	0.648
7	Norway	0.624	Finland	0.642	Finland	0.647	Netherlands	0.646
8	Netherlands	0.622	New Zealand	0.640	New Zealand	0.645	Ireland	0.646
9	Australia	0.617	Denmark	0.636	Denmark	0.641	United Kingdom	0.643
10	Germany	0.617	Germany	0.630	Germany	0.633	Germany	0.635
11	Belgium	0.592	Switzerland	0.629	Switzerland	0.631	Switzerland	0.627
12	Denmark	0.580	Norway	0.629	Sweden	0.625	Sweden	0.626
13	Austria	0.580	Sweden	0.622	Norway	0.623	Norway	0.621
14	Finland	0.574	Japan	0.613	Japan	0.615	Japan	0.620
15	Sweden	0.567	Austria	0.610	Austria	0.608	Austria	0.608
16	South Korea	0.562	Belgium	0.592	Belgium	0.590	Belgium	0.585
17	Spain	0.550	Spain	0.587	Spain	0.586	Portugal	0.583
18	New Zealand	0.549	Portugal	0.581	Portugal	0.580	Spain	0.583
19	France	0.549	Greece	0.556	Greece	0.566	Greece	0.573
20	Portugal	0.547	France	0.545	France	0.543	France	0.544
21	Italy	0.515	South Korea	0.532	South Korea	0.529	South Korea	0.528
22	Greece	0.505	Italy	0.493	Italy	0.495	Italy	0.491
23	Mexico	0.493	Turkey	0.465	Turkey	0.467	Turkey	0.469
24	Turkey	0.463	Mexico	0.454	Mexico	0.452	Mexico	0.457

Source: Institutions Climate Index for OECD Countries.

Figure 5



ago the United States, Japan, Switzerland and Canada were at the top of the ranking. Turning to the other end of the ranking scale we find Mexico, Turkey, Italy and South Korea at the bottom of the index in 2008, South Korea having replaced Greece (at the bottom in 1994).

Of the five leading countries only Canada and the United States were top performers in 1994. Australia (+8 ranks since 1994), Finland (+10 ranks since 1994) and New Zealand (+12 ranks since 1994) were not among the leading performers at that time. The Australian success story is mainly due to its educational reforms. Finland, on the other hand, improved a) its Human Capital Efficiency mainly through a rise in *tertiary enrolment*, b) its Basic Institutional Quality by abolishing *legal and administrative restrictions* and by increasing *confidence in economic policy*, and c) by opening the economy (see Ochel and Osterkamp

2007 for details). New Zealand's success consisted primarily of labour market reforms. In addition New Zealand's trade barriers were reduced and its Human Capital Efficiency improved markedly.

Looking more closely at the most recent development between 2007 and 2008, we observe that especially Denmark, Finland and New Zealand improved their ranking (+ 3 ranks). These improvements can be traced back to *labour market reforms* and to a reduction in *early retirement*. Finland also reduced the scope of *government enterprises*. The

United Kingdom, in contrast, faced a decline from rank 4 in 2007 to rank 9 in 2008. This decline is largely due to a reduction in the sub-indices Optimal Taxation, Basic Institutional Quality and Structure of Government Expenditures (an increase in *public consumption*). The UK's Basic Institutional Quality diminished because the scores of all components in that area (with the exception of *bureaucratic quality* and *legal and administrative restrictions*) declined (see Figure 5).

Institutional quality of high- and low ranking countries (2008)

High-ranking countries share some common institutional characteristics. Their Basic Institutional Quality is favourable. Governments protect *property rights*, enforce *law and order* and prevent *corruption*. Hu-

Table 2

Institutional quality as a percentage of the best-practice country (2008)

Country	Optimal Taxation	Basic Institutional Quality	Fiscal Burden	Human Capital Efficiency	Trade Openness	Labour Markets	Structure of Government Expenditure	Capital Markets
Australia	77	95	64	96	84	79	81	60
Canada	67	89	55	82	82	84	76	99
United States	42	83	77	91	81	96	85	100
Finland	98	100	22	95	86	48	56	58
South Korea	30	47	81	87	79	67	78	53
Italy	94	40	30	59	86	35	73	65
Turkey	75	31	83	26	78	26	91	27
Mexico	18	31	100	38	86	77	92	29

Source: Institutions Climate Index for OECD Countries.

Box

The methodology of constructing the Institutions Climate Index and the dataset

Based on a set of 61 candidate institutional indicators, Eicher and Röhn (2007) developed an index of endogenously selected and weighted indicators that are combined into one aggregate institutional index that reflects institutional quality and its conduciveness to economic growth in OECD countries. The methodology is as follows. First factor analysis is employed to reduce the dimensionality of independent variables and to address the high degree of collinearity among covariates that measure similar institutional characteristics. The different factors are represented by the sub-indices in the Table below and the factor components are simply labeled “components” below.

Factors are then regressed on the moving average of GDP per capita growth in a fixed effects regression that features 24 OECD countries in our sample. To address business cycle fluctuations, we average growth over time periods, which render the three cross sections in our panel: 1990–94, 1994–98 and 1998–2002. Only those factors are retained that improve the fit of the regression (factors with t value > 1).

The result is a set of factors that explain 44 percent of the variation in per capita GDP growth rates. The individual factor coefficient estimates are then used to establish the contribution of each sub-index on the aggregate institution index. Once the contribution or weight of each factor is determined, we use the factor loadings to identify the individual weight of each component in the aggregate index. (For a more extensive description of the methodology see DICE Database: http://www.cesifo-group.de/portal/page/portal/ifoHome/a-wininfo/d3iiv/_DICE_division?_id=6746666&_div=7209869.)

The Ifo Institutions Climate Index is then composed of eight distinct institutional sub-indices and 23 components. A score of 0 (1) indicates that a country received the minimum (maximum) score observed within the entire sample in each component. The weights of the sub-indices and of the components in the final index are shown below.

Sub-indices	Components	Source	Contribution index in %
Optimal Taxation ^{a)}	Top marginal tax	EFW ^{b)}	9.8
	Tax wedge	OECD ^{c)}	11.4
Basic Institutional Quality	Political stability	WES ^{g)}	6.1
	Bureaucratic quality	ICRG ^{f)}	4.5
	Law & order	ICRG ^{f)}	4.0
	Property rights & legal structure	EFW ^{b)}	4.0
	Corruption	ICRG ^{f)}	1.9
	Confidence in economic policy	WES ^{g)}	0.4
	Legal/administrative restrictions	WES ^{g)}	0.1
Fiscal Burden	Total tax revenue	OECD ^{d)}	(16.7)
Human Capital Efficiency	Tertiary gross enrolment	World Bank ^{h)}	4.8
	Schooling	World Bank ^{h)}	4.0
	Secondary gross enrolment	World Bank ^{h)}	3.2
	Public educational expenditure	World Bank ^{h)}	2.9
Trade Openness	Tariffs	EFW ^{b)}	3.8
	Trade size	EFW ^{b)}	2.9
	Black market premium	EFW ^{b)}	1.5
Labour Markets	Early retirement index	OECD ^{e)}	4.1
	Labour market regulations	EFW ^{b)}	3.2
	Female labour participation	World Bank ⁱ⁾	0.8
Structure of Government Expenditures	Public consumption	EFW ^{b)}	4.1
	Gov't enterprises & investment	EFW ^{b)}	2.5
Capital Markets	Private domestic credit	World Bank ^{j)}	1.8
	Capital market controls	EFW ^{b)}	1.5

^{a)} The sub-index “Optimal Taxation” assigns low values to countries with either insufficiently low or excessively high tax rates. The assumption is that taxes have a non-linear effect on growth. A certain quantity of tax revenues is necessary for growth to provide, for example, productivity enhancing infrastructure investments. However, excessive tax rates deter private investment. The non-linear relationship between the tax rates and growth is captured by the squared tax component. It affects the sub-index, although it is not documented in the table. ^{b)} Fraser Institute, Economic Freedom of the World (2008). ^{c)} OECD Taxing Wages (2008). ^{d)} OECD Revenue Statistics (2008). ^{e)} OECD Employment and Labour Force Statistics (2008). ^{f)} International Country Risk Guide (2007). ^{g)} Ifo World Economic Survey (2009). ^{h)} World Bank, Educational Statistics und Development Indicators (2008). ⁱ⁾ World Bank Development Indicators 2008.

Source: Eicher and Roehn (2007).

man capital is used efficiently. *Tertiary and secondary enrolment rates* are high. A considerable part of GDP is spent on *public education*. With the exception of Finland Labour Markets are flexible (Table 2).

Low-ranking OECD countries, on the other hand, have a relatively poor Basic Institutional Quality, which is a fundamental impediment to economic growth in these countries because individuals are not sufficiently protected from the government's attempt to divert resources to unproductive uses. A second impediment is the low Human Capital Efficiency (with the exception of South Korea). Education is neglected in these countries. And finally, Labour Markets (with the exception of Mexico and South Korea) and Capital Markets (with the exception of Italy) are too rigid (Table 2).

Summary

This paper provides an analysis of the recent update of the Ifo Institutions Climate Index. We have shown that the index continues to track OECD growth with remarkable precision. Lagged and averaged institutional quality indicators perform well in predicting subsequent OECD growth. The recent growth downturn is the result of unfavourable tax policies and a reduction in openness measures, both in terms of trade and capital flows in recent years. Overall OECD countries have made significant improvements in human capital formation, labour markets and the scope of state control in the private sector. In 2008 the institutional quality was most growth-conducive in Australia, Canada, the United States and Finland. At the other end of the ranking scale we find Mexico, Turkey, Italy and South Korea. During the last year Denmark, Finland and New Zealand improved their position by three ranks. The United Kingdom faced a decline in its ranking position from rank 4 in 2007 to rank 9 in 2008.

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