European Economic Sustainability Index

June 2010

By Fabian Zuleeg

ISSN 1782-494X

EUROPE'S POLITICAL ECONOMY PROGRAMME

The EPC's Programme on Europe's Political Economy

Taking the steps needed to make the EU a world leader in today's globalised economy and ensure the sustainability of the European economic and social models form the core of this programme's activities.

Europe's ability to create wealth on a sustained and sustainable basis, while at the same time ensuring employment growth, equitable income distribution and the efficient provision of public services, will depend on the necessary reforms being introduced to respond to the challenges of globalisation, the ageing of Europe's population and climate change.

The Lisbon Agenda has provided a good starting point, but Europe needs to look now at reinvigorating this process to achieve its goal of becoming the world's most competitive economy.

This programme addresses these issues through a number of fora and task forces. It engages in, and stimulates, debate on economic policy in general and focuses on specific issues such as the internal market, innovation, better regulation, energy and lifestyle risks. It also works with other programmes on cross-cutting issues such as the economic integration of migrants, the EU budget and the Union's relations with Africa and Asia.

For details of the EPC's activities under this programme, please visit our website: www.epc.eu

Table of Contents

About the author

Fabian Zuleeg is the Chief Economist at the European Policy Centre.

Executive summary

In light of the unprecedented turmoil in the euro-zone and the uncertainty over what the future holds, it is important to not only understand the current pressures on public finances but also the medium- to long-term factors which will affect the economic stability and sustainability of EU countries in future. The long-term competitiveness of European economies, their governance and their ability to carry out structural reforms to cope with long-term challenges will all influence whether countries have a sustainable economy in the long run. This will also determine the success or failure of the euro.

To assess the economic sustainability of Europe's economies, the EPC has developed an index to assess simultaneously the short-, medium- and long-term economic sustainability of EU countries relative to each other. This index is constructed using six domains: deficits, national debt, growth, competitiveness, governance/corruption and cost of ageing.

The results for the European Economic Sustainability Index (EESI) for 2010 are shown below:

	Score	Rank 2010	Group	Rank 2007	Euro?
Sweden	0.55	1	TOP	8	
Denmark	0.45	2	TOP	4	
Estonia	0.45	2	TOP	1	*Euro 2011*
Finland	0.42	4	TOP	4	Euro
Netherlands	0.28	5	HIGH	9	Euro
Germany	0.24	6	HIGH	15	Euro
Luxembourg	0.24	6	HIGH	7	Euro
Austria	0.20	8	HIGH	13	Euro
United Kingdom	0.07	9	MIDFIELD	11	
Czech Republic	0.05	10	MIDFIELD	17	
Slovakia	0.03	11	MIDFIELD	10	Euro
Poland	0.02	12	MIDFIELD	15	
Belgium	-0.01	13	MIDFIELD	22	Euro
Bulgaria	-0.02	14	MIDFIELD	12	
France	-0.03	15	MIDFIELD	20	Euro
Ireland	-0.08	16	IN DANGER	3	Euro
Slovenia	-0.09	17	IN DANGER	19	Euro
Cyprus	-0.10	18	IN DANGER	23	Euro
Lithuania	-0.13	19	IN DANGER	6	
Malta	-0.15	20	IN DANGER	21	Euro
Hungary	-0.17	21	IN DANGER	24	
Romania	-0.19	22	IN DANGER	18	
Latvia	-0.22	23	IN DANGER	2	
Spain	-0.23	24	IN DANGER	14	Euro
Portugal	-0.29	25	UNSUSTAINABLE	25	Euro
Italy	-0.38	26	UNSUSTAINABLE	27	Euro
Greece	-0.93	27	UNSUSTAINABLE	26	Euro

At the top of the ranking are the Scandinavian EU Member States with Estonia as the only New Member State (NMS) in the top group. Northern/central European countries also perform well.

Greece not only comes out bottom, it actually is very close to being the worst performing economy across all six domains of the index. Italy also has significant long-term economic sustainability problems and Portugal is also performing badly. Spain is clearly under threat. As is Ireland, but it is doing significantly better than the lowest performers.

While outperforming the problem countries of the euro-zone, the NMSs which have required IMF/EU assistance, Hungary, Latvia and Romania, also cluster at the bottom of the ranking.

There appears to be no clear relationship between euro-zone membership and the position in the EESI, indicating that long-term underlying structural factors are more important. While this does not allow a final assessment of the Stability and Growth Pact, it certainly indicates that the SGP is no guarantor for good public finances or long-term growth performance.

In comparison to 2007, the Scandinavian countries, countries such as Germany, the Netherlands and Austria, as well as France and Belgium, have all improved relatively, whereas Latvia, Lithuania, Ireland and Spain all lost ground.

The implications of the index are clear: structural reform is necessary in many countries if we wish to avoid future crises. In particular, Greece and Italy, as well as Spain, Portugal and the NMS which have received EU/IMF assistance, Hungary, Latvia and Romania, must carry out reforms which do not only improve public finance, but which also improve governance, competitiveness and productivity and deal effectively with long-term challenges. Labour market and pension reform, reform of the delivery of public services, improving the business environment and investing in future growth must all play a significant role.

The EPC intends to review the EESI regularly, every Spring when the new Commission forecast is published and potentially also when new data becomes available or in light of significant political developments such as, for example, enlargement or changes to euro-zone membership. This will provide a tool which enables commentators to chart how economic sustainability develops within the EU over the coming years.

Introduction

Europe, and the euro-zone in particular, is living through an unprecedented public finance crisis which has led to a currency crisis, with the euro under substantial pressure.

In the euro-zone crisis, much of the focus of markets and commentators has been on public finances. Those euro-zone countries with the highest deficits coupled with high national debt rates have been particularly under pressure: Greece and Portugal. Spain and Ireland have also come under pressure, due to high deficits, but their debt levels started from a much lower level. All of these countries also now share relatively low growth rates. Countries with high debt levels but relatively low deficits, such as Belgium and Italy, have largely escaped attention.

Outside the euro-zone, the countries which have been in difficulties tend to be driven by country-specific factors: external imbalances featured in all countries but economic mismanagement in Hungary (and as a result the highest debt level among the New Member States), the bursting of a speculative property bubble and a very large deficit in Latvia and concerns over governance in Romania added to the concerns.

So far markets, commentators and policy-makers have focused on the short-term, in particular on the deficits, low growth rates and the burgeoning public debt, while the medium- to long-term factors beyond government debt which will affect the economic stability and sustainability of EU countries in future have received relatively little attention. The long-term competitiveness of European economies, their governance and their ability to carry out structural reforms to cope with long-term challenges such as ageing will all influence whether countries have a sustainable economy in the long run.

To help in the assessment of Europe's prospects, the EPC has developed a European Economic Sustainability Index (EESI).[1]

The European Economic Sustainability Index

The European Economic Sustainability Index is a newly-constructed index to assess the short- and long-term prospects of European economies simultaneously.[2] It is based on six indicator domains to capture different aspects of sustainability:

Indicator domain	Description	Reason for inclusion
GDP growth (a)	Annual change in GDP (average of two years)	Short-term indicator of economic performance and of ability to repay debt
Debt levels (b)	Total government debt measured as a percentage of GDP – part of the so-called Maastricht or Convergence Criteria of Economic and Monetary Union	Medium- to long-term indicator of public finance performance
Deficit/surplus (c)	Government's net borrowing requirement, i.e. the difference between revenues and expenditure – part of the so-called Maastricht or Convergence Criteria of Economic and Monetary Union	Short-term indicator of public finance performance

Global Competitive Index (World Economic Forum) (d)	A composite indicator, capturing microeconomic and macro-economic foundations of competitiveness, defined "as the set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the sustainable level of prosperity that can be earned by an economy (e)	Long-term index of competitiveness and future growth potential
Corruption Perception Index (f) (Transparency International)	"Measures the perceived level of public-sector corruption in 180 countries and territories around the world. The CPI is a "survey of surveys", based on 13 different expert and business surveys" (g)	Underlying index of governance/rule of law and proxy for public sector efficiency
Future cost of ageing	Long-term expenditure projections covering pensions, health care, long-term care, education and unemployment transfers for all Member States (h)	Very long-term indicator of public public finance pressure and proxy for structural reform

Sources:

(a) http://ec.europa.eu/economy_finance/publications/european_economy/forecasts_en.htm
(b) Ibid.
(c) Ibid.
(d) www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm
(e) www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm
(f) www.transparency.org/policy_research/surveys_indices/cpi/2009/cpi_2009_table
(g) www.transparency.org/policy_research/surveys_indices/cpi/2009
(h) http://europa.eu/epc/pdf/2009_ageing_report.pdf

These indicators have been chosen to reflect a balance between short-, medium- and long-term pressures on economic sustainability. They have to be available in all EU Member States and ideally are updated regularly. They also have to enable a clear ranking i.e. there has to be a clearly identifiable performance scale which enables a ranking from high performance to low performance.[3] The choice of indicators is discussed in more detail in Annex A.

A country's relative position to all other EU countries is constructed by summing a relative (unweighted)[4] score across all six domains. A relative score can only meaningfully measure distance from each other. This means that there is no possibility of comparing these scores to non-EU countries which have not been included in the index in the first place. The index also does not provide an absolute assessment of the economic sustainability of Europe – rather it assesses where EU countries stand in relation to each other.

This provides a score which allows all EU countries to be ranked according to their long-term economic sustainability, and provides a benchmark to understand the underlying position of each country within the context of a fast-changing economic environment and significant policy changes.

The EESI for 2010

The EESI has been constructed to take long-term indicators into account. The results for the EESI for 2010 are shown below[5]:

	Score	Rank 2010	Group	Rank 2007	Euro?
Sweden	0.55	1	TOP	8	
Denmark	0.45	2	TOP	4	
Estonia	0.45	2	TOP	1	*Euro 2011*
Finland	0.42	4	TOP	4	Euro
Netherlands	0.28	5	HIGH	9	Euro
Germany	0.24	6	HIGH	15	Euro
Luxembourg	0.24	6	HIGH	7	Euro
Austria	0.20	8	HIGH	13	Euro
United Kingdom	0.07	9	MIDFIELD	11	
Czech Republic	0.05	10	MIDFIELD	17	
Slovakia	0.03	11	MIDFIELD	10	Euro
Poland	0.02	12	MIDFIELD	15	
Belgium	-0.01	13	MIDFIELD	22	Euro
Bulgaria	-0.02	14	MIDFIELD	12	
France	-0.03	15	MIDFIELD	20	Euro
Ireland	-0.08	16	IN DANGER	3	Euro
Slovenia	-0.09	17	IN DANGER	19	Euro
Cyprus	-0.10	18	IN DANGER	23	Euro
Lithuania	-0.13	19	IN DANGER	6	
Malta	-0.15	20	IN DANGER	21	Euro
Hungary	-0.17	21	IN DANGER	24	
Romania	-0.19	22	IN DANGER	18	
Latvia	-0.22	23	IN DANGER	2	
Spain	-0.23	24	IN DANGER	14	Euro
Portugal	-0.29	25	UNSUSTAINABLE	25	Euro
Italy	-0.38	26	UNSUSTAINABLE	27	Euro
Greece	-0.93	27	UNSUSTAINABLE	26	Euro

By taking into account the long-term sustainability of European economies, there is a clear pointer of why the Greek economy is in trouble. Greece not only comes out at the bottom, it actually is very close to being the worst performing economy across all six domains (with -1 the lowest possible score).

Portugal is also in trouble. Spain is also clearly under threat and so is Ireland, but it is placed significantly higher among the EU countries. Clearly, Italy has significant long-term economic sustainability problems, with only Greece performing worse. Greece, Portugal and Italy all struggle with economic sustainability and so does, to a slightly lesser extent, Spain, whereas Ireland does a little better than this group. The worst performing euro-zone country outside this bottom group is Malta.

While outperforming the problem countries of the euro-zone, the NMS which have required IMF/EU assistance: Hungary, Latvia and Romania, also cluster at the bottom of the ranking, with Lithuania only performing marginally better.

At the top of the ranking are the Scandinavian EU Member States, Sweden, Denmark and Finland, with Estonia as the only NMS in the top group. The northern/central European countries, Germany, Netherlands, Luxembourg and Austria, also perform well.

The middle part of the ranking is a mixture between old and new Member States. The UK, Belgium, France and Poland are in the upper midfield, with Ireland in the lower midfield. The cases of the UK, Ireland and Belgium show that despite high deficits (UK, Ireland) or high debts (Belgium) countries can still remain clear of the crisis if there are sufficient factors supporting long-term economic sustainability.

Euro-member states are present throughout the ranking. While they are prominent at the bottom of the ranking, they are also represented near the top. Overall, there appears to be no clear relationship between euro membership and the position in the EESI, indicating that long-term underlying structural factors are more important. This could also indicate that the Stability and Growth Pact (SGP) is not a sufficient driver for either public finance discipline or long-term economic development. But it might also indicate that countries relax their efforts in these policy areas once they have become euro-zone members and that the SGP works to encourage countries outside the euro-zone to match euro-zone members' efforts to ensure future membership. What it certainly indicates is that the SGP is no guarantor for good public finances or long-term growth performance.

Performance in the six domains

Below is a short description of the ranking of countries in each domain.[6]

Growth: As in most domains, Greece is at the bottom of growth performance over the two years with Latvia and Spain also performing badly. Slovakia and Poland have high growth rates, followed by Estonia.

Net borrowing (deficit): Ireland has the highest deficit over the two years, followed by the UK. Greece, Spain and Latvia also perform badly. Top performer is Sweden, followed by Estonia and Bulgaria.

Gross debt: Greece performs worse, followed by Italy and Belgium. Estonia performs best, followed by Bulgaria and Luxembourg.

World Competitiveness Index: Bulgaria is ranked lowest, followed by Greece, Latvia and Romania. The top is dominated by the Scandinavians: Sweden, Denmark and Finland.

Corruption Perception Index: Greece, Romania and Bulgaria are jointly at the bottom, followed by Italy. The Scandinavians (Sweden, Denmark and Finland), as well as the Netherlands, perform well.

Cost of ageing: Luxembourg is the worst performer, with Greece only very marginally better. Slovenia also performs badly. At the top are Latvia, Estonia and Poland.

This brief analysis of the ranking of countries in each domain demonstrates that there is significant variation in the placement of countries in each domain. This makes a composite index valuable as it can genuinely reveal something about the overall position of countries, rather than being dominated by the results in a particular domain or by similarities between the domains.

Weights of different domains

The results above are based on an equal weighting between the six domains. What happens if different weights are chosen for different domains?

Choosing the right weights in a composite indicator is a contestable exercise as it is not clear what criteria should be used to make such a choice. For this reason, sensitivity testing can show whether choosing particular weights adds to the overall performance of the index or not.

If more weight is given to the long-term indicators (CPI, WCI) with less weight on the short term (deficit and growth), with debt and cost of ageing in between[7], little changes at the top and bottom. The Scandinavians stay at the top, while Italy and Greece remain at the bottom. The most distinct trend is that the NMS perform worse across the board. Countries such as Spain and Ireland, and to some extent Portugal, move up in the rankings.

If less weight is given to the long-term indicators (CPI, WCI, cost of ageing) with more weight on the short term (deficit and growth), with debt in between[8], the Scandinavians remain in the top part of the ranking, while Greece remains at the bottom. Countries such as the UK, Spain and Ireland move down the chart, while countries such as Slovakia, Bulgaria and Italy would improve their ranking.

The current focus of commentators and markets has been almost exclusively on short- to medium-term indicators – deficit, debt and growth. If an index is constructed using only these indicators[9], the ranking is clearly skewed towards the NMS: countries such as Bulgaria, Slovakia and the Czech Republic perform much better. At the bottom, Ireland and the UK are now performing badly with countries such as Belgium and France also in danger.

The sensitivity testing with different weights, which has been summarised above, has demonstrated that there is a certain degree of consistency across different weights chosen but that greater emphasis on the long-term indicators tends to disadvantage NMS, while greater emphasis on short-term indicators disadvantages countries which have the potential to achieve long-term economic sustainability despite short-term problems. The analysis of performance in each domain has demonstrated that each domain contributes a different distribution of Member States, showing that inclusion of that domain adds additional useful information into the overall index.

Putting the weight on short-term indicators does not take sufficient account of the long-term sustainability pressures which are the focus of this index. But putting the weight on the long-term indicators would underestimate the importance of short-term imbalances. For these reasons, the future EESI will use equal weights across the domains.[10]

Past performance – the EESI 2007

To assess the consistency of the EESI over time, this section details the results of constructing an EESI for 2007.[11] The table below shows the EESI 2007[12]:

	Score	Rank	Group	Rank by 2010	Euro?
Estonia	0.80	1	TOP	-1	*Euro 2011*
Latvia	0.43	2	HIGH	-21	
Ireland	0.31	3	HIGH	-13	Euro
Finland	0.28	4	HIGH	=	Euro
Denmark	0.28	4	HIGH	+2	
Lithuania	0.27	6	HIGH	-13	
Luxembourg	0.26	7	HIGH	+1	Euro
Sweden	0.23	8	HIGH	+7	
Netherlands	0.18	9	HIGH	+4	Euro
Slovakia	0.13	10	HIGH	-1	Euro
United Kingdom	0.12	11	HIGH	+2	
Bulgaria	0.11	12	HIGH	-2	
Austria	0.04	13	MIDFIELD	+5	Euro
Spain	-0.02	14	MIDFIELD	-10	Euro
Poland	-0.04	15	MIDFIELD	+3	
Germany	-0.04	15	MIDFIELD	+9	Euro
Czech Republic	-0.09	17	IN DANGER	+7	
Romania	-0.12	18	IN DANGER	-4	
Slovenia	-0.15	19	IN DANGER	+2	Euro
France	-0.16	20	IN DANGER	+5	Euro
Malta	-0.16	21	IN DANGER	+1	Euro
Belgium	-0.22	22	IN DANGER	+9	Euro
Cyprus	-0.26	23	IN DANGER	+5	Euro
Hungary	-0.50	24	UNSUSTAINABLE	+3	
Portugal	-0.51	25	UNSUSTAINABLE	=	Euro
Greece	-0.58	26	UNSUSTAINABLE	-1	Euro
Italy	-0.59	27	UNSUSTAINABLE	+1	Euro

When comparing EESI 2007 to EESI 2010, it is clear that in countries such as Italy, Hungary, Portugal and Greece, the problems predate the crisis. Greece, which was already performing badly before the crisis, saw a further deterioration, especially in its short-term indicators. Hungary, on the contrary, managed to improve its relative position over the period.

Before the crisis hit, countries such as the Baltic States and Ireland, and to a lesser extent Spain, performed well, but of these countries only Estonia can maintain its position in the post-crisis period. In the other countries, the bursting of asset bubbles, especially housing bubbles, seems to have a major influence on the deterioration in these countries' rankings[13]. The main deterioration in their relative position in the index is a significantly weaker growth performance, coupled with high deficits and rapidly increasing government debt.

Countries such as Germany and Belgium, as well as Sweden, have improved their relative position markedly from 2007 to 2010. This is not due to a marked improvement of performance in these countries – on the contrary, most indicators stagnated or declined. But the decline across the board for other countries has been

even more marked. In other words, the improved ranking is relative, in the context of an overall deterioration of the economic environment.

Annexes I & J show the results of sensitivity testing for the EESI 2007 index. The results are broadly consistent with sensitivity testing for 2010: an emphasis on long-term indicators disadvantages the NMS, while an emphasis on short-term indicators disadvantages countries which have the potential to achieve long-term economic sustainability despite short-term problems.

Overall, the results indicate that the index works well to highlight some of the long-term underlying issues but it cannot identify *a priori* which countries will experience a marked deterioration in economic performance. Rather than identifying what countries might perform well or less well in the short term, the EESI is best suited to identifying the countries with long-term structural problems.

Policy implications

The EESI provides an opportunity to reflect on, and assess, Europe's economies more objectively, from a longer term perspective. This is the main function of the index: to indicate where currently economic sustainability is threatened, implying that policy change is needed to reach a more sustainable path.

It is clear from the EESI why Greece is in trouble: it clearly shows that Greece is a special case, being in a far worse position, both in short-term and long-term indicators, than any other country. Italy initially escaped the attention of financial markets due to its relatively low deficit but as markets and policy-makers are increasingly focusing on longer term indicators, Italy has also come into focus. Portugal also clearly has long-term underlying structural problems, with Spain in a marginally better position. Countries such as the UK and Ireland, with significant short-term public finance difficulties, or Belgium, with a high level of debt, have better long-term prospects and their public finances and economies are, for this reason, more sustainable.

The implications of the index are clear: structural reform is necessary in many countries if we wish to avoid future crises. In particular, Greece and Italy, as well as Spain, Portugal and the NMS which have received EU/IMF assistance: Hungary, Latvia and Romania, must carry out reforms which do not only improve public finances, but also improve governance, competitiveness and productivity and deal effectively with long-term challenges. Labour market and pension reform, reform of the delivery of public services, improving the business environment and investing in future growth must all play a significant role.

Here, there is potentially a significant role for the EU and also the IMF. Even the countries which are facing acute public finance difficulties must be allowed the space and investment to transform their economy to foster future growth. This might in some cases involve a discussion on rescheduling or even cancelling some of the debt in return for the right kind of investment commitments. The EU can also go further: its growth strategy and available EU funding must aim to help these countries to invest in the future and to carry out the necessary structural reforms.

This is a considerable challenge in the current environment, especially for those countries already in crisis. Here, the emphasis is now on austerity measures to get public finances under control in the short term. Providing further support is also deeply unpopular in some of the countries which have to underwrite such policies, most notably in Germany. But without the long-term perspective, this will only aggravate the future growth crisis, leading to further public finance problems.

Without a more positive, forward-looking policy it will be difficult to keep EU citizens on board both in the Member States which need support, and in those able to provide it. Practised solidarity will not only provide a more positive perspective for those living in economies which are in crisis, it is also in the long-term interest of the economically-stronger Member States, given the interdependent nature of the European economy.

In the absence of joint action, if certain countries are allowed to deteriorate further, Europe will face low growth and further crisis in future. This might mean that the whole European project will be under threat, with immeasurable impacts on future generations of Europeans.

Next steps

The EPC intends to update the EESI each Spring after the Spring forecast of the European Commission is published. At certain significant points in time, when new data becomes available or with the accession of a new Member State, the index might also be updated.

This will provide a long-term tool to assess the economic sustainability of Europe's economies. It will maintain a focus on these issues even after the immediate crisis has passed, ensuring that the long-term reform agenda does not become marginalised.

The intention is also to hold a mirror to many European governments. In line with the benchmarking approach in Europe 2020, this 'naming and shaming' is intended to prompt action from governments which are avoiding the necessary structural reforms. At the same time, the EESI also points to the need to focus across Europe on structural reform and investment into future growth and to have a more effective framework which delivers practical solidarity: higher growth rates across the EU.

If the EESI can make a small contribution to ensuring that European governments pay more attention to the economic legacy we are creating for future generations of Europeans across all EU Member States – both in terms of the debt legacy but also in terms of equipping Europeans with the means to drive upward economic growth and to safeguard Europe's economic and social model – it will have fulfilled its objective.

Annex A: Technical Annex – EESI 2010

Composite indicators (which summarise a number of other indicators into a single number) have significant advantages and disadvantages. As a result, they will always be controversial. As statistician Andrea Saltelli has noted: "[…] it is hard to imagine that the debate on the use of composite indicators will ever be settled […] official statisticians may tend to resent composite indicators, whereby a lot of work in data collection and editing is "wasted" or "hidden" behind a single number of dubious significance. On the other hand, the temptation of stakeholders and practitioners to summarise complex and sometime elusive processes (e.g. sustainability, single market policy, etc.) into a single figure to benchmark country performance for policy consumption seems likewise irresistible."[14]

To enable this benchmarking between countries in the field of economic sustainability, the EESI is a composite indicator which combines six domains: National debt, deficits, economic growth, competitiveness, corruption/governance and cost of ageing. This enables the construction of a single score which simultaneously puts each EU country's short- and long-term economic sustainability in relative context to each other. It incorporates forecasts and projections wherever possible to enable an assessment of future and long-term performance.

One issue associated with composite indicators is the choice of the individual components. This has to be driven by both theoretical considerations (in this instance, the main driver was to extend short-term indicators by longer-term structural indicators) as well as practicalities (availability of the indicator for all EU Member States). The table below summarises the indicators chosen for the EESI:

Domain	Source/description	Reason for inclusion	Data in the 2010 edition of the EESI
Net borrowing	Spring Forecast of the European Commission, average of current and next year	Maastricht Criteria, indicator of short-term sustainability of public finances	2010, 2011 [Spring 2010]
Gross debt	Spring Forecast of the European Commission, current year	Maastricht Criteria, indicator of medium- to long-term state of public finances	2010 [Spring 2010]
Growth	Spring Forecast of the European Commission, average of current and next year	Indicator of short-term economic prospects	2010, 2011 [Spring 2010]
Global Competitiveness Index	Score, from the latest World Economic Forum GCI	Indicator of long-term economic potential	2009 [2009 Index]
Corruption Perception Index	Score, from the latest Transparency International report	Indicator of long-term underlying health and stability of public/economic institutions, proxy for governance/rule of law	2009-2010 [2009-10 Index]
Cost of ageing	Total cost of ageing estimate from Cost of Ageing report of the European Commission	Indicator of very long-term pressures on public finances	2060 [2009 Report]

Ideally, all these indicators would be available and updated on a regular basis. If they were all to be updated at the same time, it would also help to construct the composite indicator. However, the data for the long-term structural indicators is not available at the same time and frequency as the short- to medium-term indicators. The short- and medium-term indicators (growth, deficits, debt) are all available from the Commission's Spring and Autumn forecasts. The Corruption Perception Index (CPI) and Global Competitiveness Index (GCI) are updated on an annual basis.

The Cost of Ageing is only available intermittently (the 2006 and 2009 reports were used for this report and it is currently unclear when the next one will be produced). However, as the Cost of Ageing incorporates both the pressure from demographics and can act as a proxy for structural reforms, it has been included. If no new data becomes available in the near future, it might need to be replaced, for example by unemployment and projections of dependency ratios.

One key question in a composite indicator is whether the individual domains are independent of each other or whether there is significant overlap, i.e. whether particular domains measure broadly the same thing (in which case, there is no additional information revealed by including an additional domain and it results in particular data receiving implicitly a higher weight). In this case, all domains reveal different rankings, suggesting that they measure different developments. Potentially, there is some direct overlap between the CPI and the GCI as well as the debt/deficit domains, as the GCI covers corruption and governance, as well as debt/deficits (as part of the macroeconomic stability criterion). However, these elements are only a small component of the total GCI.

For any composite indicator, there is a balance to be struck between the number of indicators with a too high number adding complexity and reducing focus. The index focuses on public finances rather than looking at the overall net indebtedness of an economy (private and public debt). This is in part due to the availability of data and in part reflects the focus on Economic and Monetary Union, specifically the public finance convergence criteria.

Arguably other indicators should also have been included, for example inflation, trade or balance of payment balances, savings rates or the overall degree of external indebtedness. However, not only is data on all of these not always readily available but there is also ambiguity: no single direction is 'good' or 'bad'. For example, for inflation some level of low but positive inflation is seen as the best position for countries. Inclusion of these indicators would thus require a judgment of the 'ideal' rate which is best avoided.

It could also be argued that sustainability should include social and environmental indicators. While these dimensions are very important, they are not the main focus of this composite indicator and for that reason they have been excluded.

The final composite indicator (i.e. the EESI) is a relative indicator – it shows the position of a country in the context of the other 26 EU Member States. To determine relative position, the methodology uses two steps:

- Normalisation – the lowest outcome set to 0 in each domain and all other scores are subject to an equal adjustment to (e.g. if lowest score is -1, 1 is added to all scores);
- Distance from mean – the percentage distance from the arithmetic mean of all EU Member States (NB: not from the EU average, as this is a weighted average, dependent on size of each country) is then constructed for each domain (the country score is divided by the arithmetic mean and one is subtracted – the lowest possible score is thus -1).

To determine the overall position, the sum of all domains is divided by 6.

Choosing weights for each indicator is probably the biggest challenge for composite indicators. The final step detailed above shows that all domains are equally weighted in the EESI. The paper describes in more detail why equal weighting has been chosen and the sensitivity tests which have been used.

Finally, all countries are then grouped into five categories: top, high, midfield, in danger and unsustainable. This is a subjective grouping, based on the distribution of the EESI score. As a subjective assessment, it only serves to illustrate a broad grouping of these countries for descriptive purposes and should not be misunderstood as a credit rating.

Annex B: Data for the 2010 EESI

	Growth	WCI	Net borrowing	Gross debt	CPI (TI)	Cost of ageing
Belgium	1.45	5.09	-5	99.00	7.10	33.40
Bulgaria	1.35	4.02	-2.5	17.40	3.80	20.20
Czech Republic	2	4.67	-5.7	39.80	4.90	23.40
Denmark	1.7	5.46	-5.2	46.00	9.30	27.40
Germany	1.4	5.37	-4.85	78.80	8.00	28.40
Estonia	2.35	4.56	-2.4	9.60	6.60	14.70
Ireland	1.05	4.84	-11.9	77.30	8.00	26.20
Greece	-1.75	4.04	-9.6	124.90	3.80	37.90
Spain	0.2	4.59	-9.3	64.90	6.10	28.30
France	1.4	5.13	-7.7	83.60	6.90	31.20
Italy	1.1	4.31	-5.15	118.20	4.30	27.60
Cyprus	0.45	4.57	-7.4	62.30	6.60	26.20
Latvia	-0.1	4.06	-9.25	48.50	4.50	13.60
Lithuania	1.3	4.30	-8.45	38.60	4.90	21.20
Luxembourg	2.2	4.96	-3.7	19.00	8.20	38.00
Hungary	1.4	4.22	-4.05	78.90	5.10	25.70
Malta	1.4	4.30	-3.55	71.50	5.20	28.40
Netherlands	1.55	5.32	-5.7	66.30	8.90	29.90
Austria	1.45	5.13	-4.65	70.20	7.90	29.00
Poland	3	4.33	-7.15	53.90	5.00	18.10
Portugal	0.6	4.40	-8.2	85.80	5.80	27.80
Romania	2.15	4.11	-7.7	30.50	3.80	23.20
Slovenia	1.45	4.55	-5.65	41.60	6.60	35.80
Slovakia	3.15	4.31	-5.7	40.80	4.50	20.40
Finland	1.75	5.43	-3.35	50.50	8.90	30.50
Sweden	2.15	5.51	-1.85	42.60	9.20	29.70
United Kingdom	1.65	5.19	-11	79.10	7.70	24.00

Annex C: Results (scores) for the six domains – EESI 2010

	Growth	WCI	Net borrowing	Gross debt	CPI (TI)	Cost of ageing
Belgium	0.02	0.59	0.20	-0.60	0.29	-0.59
Bulgaria	-0.02	-1.00	0.64	0.68	-1.00	0.57
Czech Republic	0.19	-0.04	0.08	0.33	-0.57	0.29
Denmark	0.10	1.14	0.17	0.23	1.15	-0.06
Germany	0.00	1.00	0.23	-0.28	0.64	-0.15
Estonia	0.30	-0.20	0.66	0.80	0.10	1.06
Ireland	-0.11	0.21	-1.00	-0.26	0.64	0.04
Greece	-1.00	-0.97	-0.60	-1.00	-1.00	-0.99
Spain	-0.38	-0.16	-0.55	-0.07	-0.10	-0.14
France	0.00	0.65	-0.27	-0.36	0.21	-0.40
Italy	-0.10	-0.57	0.18	-0.90	-0.80	-0.08
Cyprus	-0.30	-0.19	-0.21	-0.02	0.10	0.04
Latvia	-0.48	-0.94	-0.54	0.19	-0.73	1.15
Lithuania	-0.03	-0.59	-0.40	0.34	-0.57	0.48
Luxembourg	0.25	0.40	0.43	0.65	0.72	-1.00
Hungary	0.00	-0.71	0.37	-0.28	-0.49	0.09
Malta	0.00	-0.59	0.46	-0.17	-0.45	-0.15
Netherlands	0.05	0.93	0.08	-0.09	1.00	-0.28
Austria	0.02	0.65	0.27	-0.15	0.60	-0.21
Poland	0.51	-0.54	-0.17	0.11	-0.53	0.76
Portugal	-0.25	-0.43	-0.35	-0.39	-0.22	-0.10
Romania	0.24	-0.87	-0.27	0.47	-1.00	0.31
Slovenia	0.02	-0.21	0.09	0.30	0.10	-0.81
Slovakia	0.56	-0.57	0.08	0.31	-0.73	0.55
Finland	0.11	1.09	0.49	0.16	1.00	-0.34
Sweden	0.24	1.20	0.75	0.28	1.11	-0.27
United Kingdom	0.08	0.73	-0.84	-0.29	0.53	0.24

Annex D: Weighted index with emphasis on long-term indicators – EESI 2010

The weights used come in three categories: high [*1.5], medium [*1], low [*0.5], i.e. a high weight means that the domain counts three times as much as one which has a low weight.

Weights chosen in this sensitivity analysis:

- Low – growth, deficit
- Medium – debt, cost of ageing
- High – WCI, CPI

The table below shows new score and rank:

	Score	Rank	Group
Sweden	0.66	1	TOP
Denmark	0.62	2	TOP
Finland	0.54	3	TOP
Netherlands	0.43	4	HIGH
Germany	0.36	5	HIGH
Estonia	0.36	5	HIGH
Luxembourg	0.28	7	HIGH
Austria	0.28	7	HIGH
United Kingdom	0.24	9	HIGH
Ireland	0.08	10	MIDFIELD
France	0.07	11	MIDFIELD
Belgium	0.04	12	MIDFIELD
Czech Republic	-0.03	13	MIDFIELD
Cyprus	-0.06	14	MIDFIELD
Poland	-0.10	15	IN DANGER
Slovenia	-0.10	15	IN DANGER
Slovakia	-0.13	17	IN DANGER
Spain	-0.18	18	IN DANGER
Lithuania	-0.19	19	IN DANGER
Bulgaria	-0.24	20	IN DANGER
Malta	-0.28	21	IN DANGER
Latvia	-0.28	21	IN DANGER
Portugal	-0.29	23	IN DANGER
Hungary	-0.30	24	IN DANGER
Romania	-0.34	25	IN DANGER
Italy	-0.50	26	UNSUSTAINABLE
Greece	-0.96	27	UNSUSTAINABLE

Annex E: Weighted index with emphasis on short-term indicators – EESI 2010

The weights used come in three categories: high [*1.5], medium [*1], low [*0.5], i.e. a high weight means that the domain counts three times as much as one which has a low weight.

Weights chosen in this sensitivity analysis:

- Low – WCI, CPI, cost of ageing
- Medium – debt
- High – growth, deficit

The table below shows new score and rank:

	Score	Rank	Group
Sweden	0.47	1	TOP
Estonia	0.45	2	TOP
Finland	0.32	3	TOP
Luxembourg	0.29	4	TOP
Denmark	0.29	4	TOP
Bulgaria	0.15	6	HIGH
Slovakia	0.15	6	HIGH
Netherlands	0.15	6	HIGH
Germany	0.14	9	HIGH
Austria	0.13	10	HIGH
Czech Republic	0.10	11	HIGH
Poland	0.08	12	HIGH
Slovenia	0.00	13	MIDFIELD
Malta	-0.01	14	MIDFIELD
Belgium	-0.02	15	MIDFIELD
Hungary	-0.05	16	MIDFIELD
Romania	-0.06	17	MIDFIELD
France	-0.09	18	MIDFIELD
Lithuania	-0.11	19	MIDFIELD
United Kingdom	-0.11	19	MIDFIELD
Cyprus	-0.14	21	MIDFIELD
Italy	-0.25	22	IN DANGER
Ireland	-0.25	23	IN DANGER
Latvia	-0.26	24	IN DANGER
Spain	-0.28	25	IN DANGER
Portugal	-0.28	25	IN DANGER
Greece	-0.81	27	UNSUSTAINABLE

Annex F: The EESI without long-term indicators – EESI 2010

The ranking below is constructed by only using the short- to medium-term indicators (growth, deficit, debt) with equal weights.

	Score	Rank	Group
Estonia	0.59	1	TOP
Luxembourg	0.45	2	TOP
Bulgaria	0.43	3	TOP
Sweden	0.43	3	TOP
Slovakia	0.32	5	HIGH
Finland	0.25	6	HIGH
Czech Republic	0.20	7	HIGH
Denmark	0.16	8	HIGH
Romania	0.15	9	HIGH
Poland	0.15	9	HIGH
Slovenia	0.14	11	HIGH
Malta	0.10	12	HIGH
Austria	0.04	13	MIDFIELD
Hungary	0.03	14	MIDFIELD
Netherlands	0.01	15	MIDFIELD
Germany	-0.02	16	MIDFIELD
Lithuania	-0.03	17	MIDFIELD
Belgium	-0.13	18	IN DANGER
Cyprus	-0.18	19	IN DANGER
France	-0.21	20	IN DANGER
Latvia	-0.27	21	IN DANGER
Italy	-0.27	21	IN DANGER
Spain	-0.33	23	IN DANGER
Portugal	-0.33	23	IN DANGER
United Kingdom	-0.35	25	IN DANGER
Ireland	-0.46	26	UNSUSTAINABLE
Greece	-0.87	27	UNSUSTAINABLE

Annex G: Technical annex for EESI 2007

For comparison purposes, an EESI for 2007 was constructed. The table below details the sources of data:

Domain	Source/Description	Data in the 2007 edition of the EESI
Net borrowing	Spring Forecast of the European Commission, average of current and next year	2007, 2008 [Spring 2007]
Gross debt	Spring Forecast of the European Commission, current year	2007 [Spring 2007]
Growth	Spring Forecast of the European Commission, average of current and next year	2007, 2008 [Spring 2007]
Global Competitiveness Index	Score, from the latest World Economic Forum	2006 [2006-07 Index]
Corruption Perception Index	Score, from the latest Transparency International report	2006 [2006 Index]
Cost of ageing	Total cost of ageing estimate from Cost of Ageing Report of the European Commission (1)	2050 [2006 Report]

Source:

(1) Please note that the original Cost of Ageing data excluded an important component (pension costs) from Greece. For this reason, Greek data was added in from a subsequent estimate.
(Source: http://ec.europa.eu/economy_finance/publications/publication16034_en.pdf).
Romanian and Bulgarian data were not available in 2006 so the data from 2009 were used.

Annex H: Data EESI 2007

	Growth	WCI	Net borrowing	Gross debt	CPI (TI)	Cost of ageing
Belgium	2.25	5.27	-0.5	86.3	7.3	31.7
Bulgaria	6.1	3.96	1.75	21.8	4	20.2
Czech Republic	4.9	4.74	-3.4	30.8	4.8	26.4
Denmark	2.25	5.7	4.25	24.5	9.5	31.6
Germany	1.6	5.58	-1.4	67.7	8	26.4
Estonia	8.95	5.12	1.45	2.7	6.7	14.4
Ireland	4.8	5.21	0.65	24.4	7.4	23.3
Greece	3.7	4.33	-2.5	101	4.4	34.2
Spain	3.35	4.77	1	37	6.8	28.6
France	2.2	5.31	-2.4	63.9	7.4	29.6
Italy	1.4	4.46	-3	105.9	4.9	28
Cyprus	3.85	4.36	-1.7	62.2	5.6	28.2
Latvia	8.45	4.57	-1.2	10.6	4.7	16.2
Lithuania	6.75	4.53	-1.25	19.6	4.8	17.4
Luxembourg	4.35	5.16	-0.4	7.3	8.6	27.8
Hungary	2.55	4.52	-6.5	70.9	5.2	27.7
Malta	2.15	4.54	-2.8	69	6.4	18.5
Netherlands	2.75	5.56	0.2	47.8	8.7	25.8
Austria	2.35	5.32	-1.1	60.9	8.6	25.3
Poland	4.75	4.3	-1.9	43.1	3.7	17
Portugal	1.6	4.6	-3.95	69.4	6.6	33.6
Romania	5.7	4.02	-2.6	13.9	3.1	23.2
Slovenia	4.35	4.64	-1.55	28	6.4	33.8
Slovakia	6.45	4.55	-2.95	31.6	4.7	19.1
Finland	2.8	5.76	2.9	37.3	9.6	30.6
Sweden	3.2	5.74	2.45	42.6	9.2	31.8
United Kingdom	2.5	5.54	-2.65	44.1	8.6	23.6

Annex I: Weighted index with emphasis on long-term indicators – EESI 2007

The weights used come in three categories: high [*1.5], medium [*1], low [*0.5], i.e. a high weight means that the domain counts three times as much as one which has a low weight.

Weights chosen in this sensitivity analysis:

- Low – growth, deficit
- Medium – debt, cost of ageing
- High – WCI, CPI

The table below shows new score and rank :

	Score	Rank	Group
Estonia	0.62	1	TOP
Finland	0.41	2	HIGH
Denmark	0.40	3	HIGH
Sweden	0.34	4	HIGH
Netherlands	0.31	5	HIGH
Luxembourg	0.31	5	HIGH
Ireland	0.31	5	HIGH
United Kingdom	0.30	8	HIGH
Latvia	0.21	9	HIGH
Austria	0.18	10	HIGH
Germany	0.14	11	HIGH
Lithuania	0.10	12	HIGH
Slovakia	0.00	13	MIDFIELD
Spain	-0.03	14	MIDFIELD
France	-0.03	14	MIDFIELD
Malta	-0.11	16	IN DANGER
Belgium	-0.12	17	IN DANGER
Czech Republic	-0.14	18	IN DANGER
Bulgaria	-0.15	19	IN DANGER
Poland	-0.17	20	IN DANGER
Slovenia	-0.18	21	IN DANGER
Romania	-0.31	22	UNSUSTAINABLE
Cyprus	-0.32	23	UNSUSTAINABLE
Portugal	-0.41	24	UNSUSTAINABLE
Hungary	-0.43	25	UNSUSTAINABLE
Italy	-0.56	26	UNSUSTAINABLE
Greece	-0.65	27	UNSUSTAINABLE

Annex J: Weighted index with emphasis on short-term indicators – EESI 2007

The weights used come in three categories: high [*1.5], medium [*1], low [*0.5], i.e. a high weight means that the domain counts three times as much as one which has a low weight.

Weights chosen in this sensitivity analysis:

- Low – WCI, CPI, cost of ageing
- Medium – debt
- High – growth, deficit

The table below shows new score and rank:

	Score	Rank	Group
Estonia	0.87	1	TOP
Latvia	0.56	2	HIGH
Lithuania	0.35	3	HIGH
Bulgaria	0.32	4	HIGH
Ireland	0.30	5	HIGH
Luxembourg	0.23	6	HIGH
Denmark	0.22	7	HIGH
Finland	0.20	8	HIGH
Slovakia	0.19	9	HIGH
Sweden	0.18	10	HIGH
Netherlands	0.05	11	MIDFIELD
Romania	0.05	11	MIDFIELD
Spain	0.03	13	MIDFIELD
Poland	0.01	14	MIDFIELD
Czech Republic	-0.03	15	MIDFIELD
Slovenia	-0.04	16	MIDFIELD
United Kingdom	-0.08	17	IN DANGER
Austria	-0.11	18	IN DANGER
Cyprus	-0.18	19	IN DANGER
Germany	-0.22	20	IN DANGER
Belgium	-0.26	21	IN DANGER
France	-0.26	21	IN DANGER
Malta	-0.28	23	IN DANGER
Greece	-0.43	24	UNSUSTAINABLE
Portugal	-0.53	25	UNSUSTAINABLE
Hungary	-0.54	26	UNSUSTAINABLE
Italy	-0.61	27	UNSUSTAINABLE

Endnotes

1. The initial suggestion for the development of such an index has come from Hans Martens, Chief Executive of the European Policy Centre. The Index has been constructed by Fabian Zuleeg, Chief Economist, European Policy Centre.
2. Annex A sets out the technical details of how this composite index is constructed.
3. For a number of economic indicators it is not clear whether a higher or lower value is positive or negative. For example, it is unlikely that zero inflation is an ideal point, but it is not clear where this ideal point should lie and whether negative inflation (deflation) should be judged the same way as inflation.
4. The reason why an unweighted score has been chosen is explored later on in this paper which also assesses the sensitivity of the EESI for different weights.
5. The underlying data is shown in Annex B.
6. The detailed data can be found in Annex C.
7. The weighting and the resulting ranking are detailed in Annex D.
8. The weighting and the resulting ranking are detailed in Annex E.
9. The resulting ranking is detailed in Annex F.
10. Choosing weights (or no weights) is in the end a subjective exercise. However, in the view of the author, the sensitivity testing and the overall performance of the index provide sufficient reasons to err on the side of simplicity and the use of unweighted domains.
11. Annex G details the data used for the EESI 2007 as well as methodological issues.
12. Annex H shows the underlying data for EESI 2007.
13. It would be useful to include an indicator which could measure the over-valuation of asset markets in the index, but there is currently no common or agreed indicator. In addition, it is unclear which market would be most appropriate (e.g. property, stocks, etc.).
14. Andrea Saltelli, JRC. http://composite-indicators.jrc.ec.europa.eu/