



EUROPEAN COMMISSION
DIRECTORATE GENERAL
ECONOMIC AND FINANCIAL AFFAIRS

USER GUIDE OF THE LISBON ASSESSMENT FRAMEWORK (LAF) DATABASE

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1. Introduction

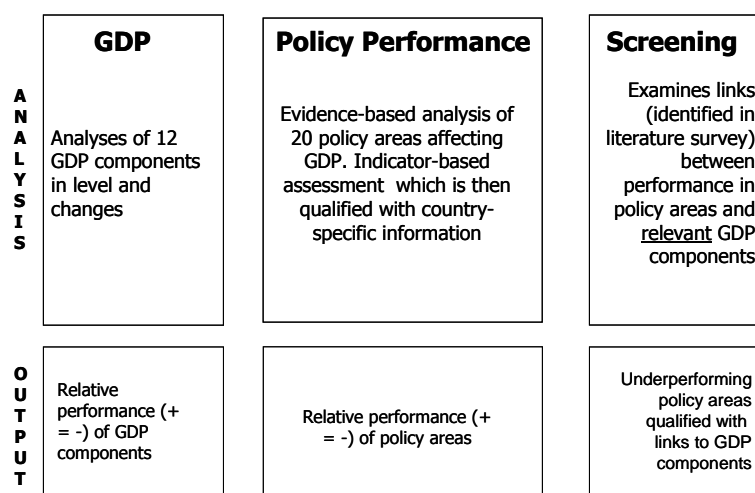
LAF is an analytical tool (not a rule) that can help underpin the assessment of policy challenges facing Member States in raising growth potential. Building upon the results of an extensive literature survey, it systematically compares the performance of Member States in terms of GDP and twenty growth affecting policy areas (looking at both levels and changes) relative to a benchmark (EU15, EU27, EU12, EA16, EU5). This involves the utilisation of scores calculated from quantitative indicators (mostly structural indicators of Eurostat and EMCO), whose choice was based on the literature survey and involved considerable dialogue and exchange of views with LIME and EMCO to lead to an assessment of relative performance. Additional information on country specific conditions and circumstances is an integral part of the LAF as a complement to the indicator-based assessment. This tool was developed by the Commission services working together with national authorities in the EPC's Lisbon Methodology Working Group (LIME), and in close collaboration with EMCO. There are two outputs on LAF:

- a LAF methodology or analytical framework, agreed by LIME, and which could be used to assess policy challenges facing Member States in raising growth potential but could also serve for a variety of analytical purposes;
- a LAF database (20 Excel files, one per policy area) with all the data and computations used in the LAF case studies. This should be seen as a separate output in its own right, as the Commission has developed this analytical tool, and made it available to national authorities in LIME and EMCO who can use it themselves for their own purposes;

2. General design of the LAF database

The LAF is structured around three main elements. The LAF database records the analytical part of these main elements in 37 worksheets.

The LIME Assessment Framework (LAF)



- first, there is an examination of the sources of GDP per capita differentials and the main drivers of growth. In particular, a statistical analysis is carried out of twelve GDP components (3 demographic, 6 labour utilisation, 3 labour productivity), in both levels

(2007) and changes (2000-07) relative to a benchmark. This element can be found only in the file "LAF Maquette-Older-Worker-labour-supply-12-08.xls".

- second, an evidence-based analysis of performance is carried out in 21 policy areas which the economic literature has identified as being relevant for GDP. This consists of an indicator-based assessment, the results of which are then qualified through a transparent mechanism/system by country-specific information. The outcome is an assessment of the relative performance (+ = -) of all policy areas. Each LAF database contains 22 worksheets available filled with the relevant indicators and the indicator-based assessment is automatically generated in level (2007/8) and change (1999-2007/8).
- finally, for the policy areas identified as being underperforming (-), a screening exercise examines whether there is a coincidence of underperformance in the relevant GDP components that have been identified in the literature.

3. Underlying assumptions and approaches

The following underlying assumptions have been agreed by LIME in developing LAF.

As regards *data sources*, LAF relies on data and indicators that are already commonly used in coordination processes at the EU level. The macroeconomic data underpinning the assessment of GDP components mostly comes from the Commission (AMECO).

As regards the *time horizon*, the indicator-based assessment of performance of GDP components and policy areas is made with respect to both levels and changes. The analysis is based on data for the period 2000 to 2006, i.e. from the beginning of the Lisbon process, although the Commission has agreed to update the database in time for autumn country review exercise

The LIME group discussed the *choice of benchmark* on several occasions¹. Although some Member States felt that it was not ambitious enough, it was agreed to use the EU15 (weighted average) as a working assumption. In addition, at the request of LIME members, the Commission services have introduced a feature in the LAF database which allows to easily use alternative benchmarks, e.g. euro area 16, EU27, EU15, best 5 EU countries, EU 12 and the US.

A *standardised continuous score system* has been applied to assess performance of both GDP components and policy areas, both for levels and changes. It simply consists in standardising the value of the considered indicator by the mean and the standardised deviation and multiplying it by ten. More formally, it can be expressed as

$$\text{Score} = [(\text{Indicator} - \text{EU15 average}) / \text{Standard deviation}] * 10$$

To avoid giving too much weight to outliers, the score is capped at three standard deviations. Thus scores range from +30 to -30: a score of 0 implies the indicator in question is the same as the EU15 weighted average, whereas a score of -10 implies the indicator is 1 standard deviation below the EU15 average. Standardised thresholds have also been used to determine categories of performance. Any score below - 4 is *a priori* considered to represent

1 Several LIME members have argued that the US could provide a good benchmark due to its similar size and level of development to the EU. On the other hand, the differences in social preferences on both sides of the Atlantic coupled with the conceptual problems of per capita GDP as a measure of economic well-being reduce somewhat the relevance of US policies to be applied in the European context. Moreover, data limitations do not currently allow to perform the GDP decomposition growth accounting at the most disaggregated level using the US benchmark

underperformance (-)²: any score between +3 and -3 is *a priori* considered to represent a neutral performance (=): any score above +4 is *a priori* considered to represent over-performance (+). These thresholds have been chosen because, assuming a normal distribution of results, one third of outcomes should be found in each of the categories.³

4. The policy areas covered by the 20 LAF database

Ten areas concern labour market and demographic issues; nine policy areas are especially relevant for labour productivity as they deal with product and capital markets plus innovation and knowledge; one policy area cover macroeconomic policies. An additional area, namely "macroeconomic background information" is included in the LAF database. It is not a "real" growth-enhancing policy area, but rather provides a first indication on the broad orientation of the macroeconomic framework.

² The normal rounding rules have been applied. Hence, any score below - 3.5 is rounded and presented as -4 in the summary tables and is *a priori* considered to represent underperformance.

³ See the note for the November 2007 LIME working group meeting on "*Identifying the most important growth-enhancing policies in EU Member States: proposals for refinements to the methodology in response to the comments of lime members*" (REP 55034).

Labour market

Active labour market policies
Making work-pay: interplay of tax and benefit system
Labour taxation to stimulate labour demand
Job protection and labour market segmentation/dualisation
Policies increasing working time
Specific labour supply measures for women
Specific labour supply measures for older-workers
Wage bargaining and wage-setting policies
(i) Wage moderation (macroeconomic aspects) and a
(ii) Wage differentiation (microeconomic aspects)
Immigration and integration policies
Labour market mismatch and labour mobility

Product and capital market

Competition policy framework
Sector specific regulation (telecom, energy)
(i) telecom
(ii)energy
(iii) other
Business environment - Regulatory barriers to entrepreneurship
Business Dynamics - Start-up conditions
Financial markets and access to finance
(i) efficiency of the financial system;
(ii) financial market integration, and
(iii) competition of financial markets
Market integration - Openness to trade and investment

Innovation and knowledge

R&D and Innovation
Education and life long learning
ICT

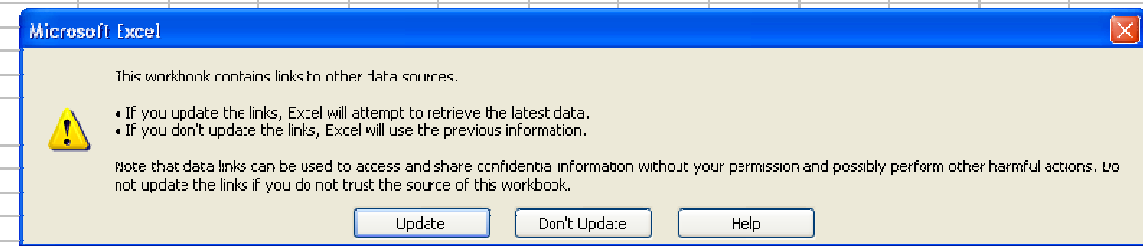
Macroeconomy

Orientation and sustainability of public finances
(i) Consolidation of public finance and
(ii) Sustainability
Macroeconomic background information (no aggregate score computed)*

* The scores presented in the policy area "macroeconomic context" would not interpreted normatively, but purely statically (positive above the average/negative below): it should not be considered a "real" growth-enhancing policy area, but rather as first indication on the broad orientation of the macroeconomic framework: no narrow list is necessary and no aggregate score is calculated.

5. Description of the Worksheets

While opening the LAF database, two warnings can pop-up, you have to choose "Enable macros" and "Update" if you want to edit the link with the benchmark chosen.



Worksheet 1-4

They summarize the content of the workbook and provide general instructions on how to use the LAF database. They also contain general information on the policy area concerned which was manually entered. (i.e. parameters, choice of the narrow list of indicators and weights, choice of a benchmark)

They are as follows:

- Table of contents: describes the structure of the LAF database. You can easily access the different worksheets through this sheet (see picture below).
- Narrow list: explains the choice of the narrow list of indicators following different criteria⁴. It is not an automated table. It is just an informative table.
- Read me: gives an indication on how to use the LAF database.
- Parameters: gives the key parameters used in all the worksheet. You can find the name here of the policy area (cell C3) that will appear in the output tables and table of contents, and you can choose the benchmark you prefer.

Also in some policy areas you can find a short data notice following inputs from Members States.

⁴ The European Commission's Directorate-General for Economic and Financial Affairs and The Economic Policy Committee (2008) "The LIME assessment framework (LAF): A methodological tool to compare, in the context of the Lisbon Strategy, the performance of EU Member States in terms of GDP and in terms of twenty policy areas affecting growth". European Economy. Occasional Papers n°41. October 2008. Brussels.

Proposed methodology to identify growth enhancing policy	
Specific labour supply measures for older-workers	
GENERAL PARAMETERS	
README	
Parameters	
Benchmark / weights for growth and level	
Narrow list of indicators	
Choice of the relevant GDP components	
Growth accounting assessment	
Growth accounting data	
Level decomposition	
growth decomposition	
Level growth assessment	
Level assessment	
growth assessment	
Relevant policy area and indicators	
Policy area data - inputisation	
Indicator 1: Implicit tax on continued work (c)	High level meaning: Good performance
Indicator 2: Coverage of early retirement (c)	High level meaning: Bad performance
Indicator 3: Life-long learning: Participation of the population aged 55-64 in education and training (c)	High level meaning: Good performance
Indicator 4: Average exit age from the labour force- total (c)	High level meaning: Good performance
Indicator 5: Difference between employment rate of older workers aged 55 to 64 and total (5-64 - Men (c))	High level meaning: Good performance
Indicator 6: Difference between employment rate of older workers aged 55 to 64 and total (5-64 - Women (c))	High level meaning: Good performance
Indicator 7: Life-long learning: Participation of the population aged 45-54 in education and training (EMCO 23M4) (c)	High level meaning: Good performance
Indicator 8: Activity rate (55 to 64 years) (Eurostat) 1999-2006 (c)	High level meaning: Good performance
Indicator 9: Employment rate of older workers aged 55 to 64- Total (c)	High level meaning: Good performance
Indicator 10: Indicator	High level meaning: Unclear
Indicator 11: Indicator	High level meaning: Unclear
Indicator 12: Indicator	High level meaning: Unclear
Indicator 13: Indicator	High level meaning: Unclear
Indicator 14: Indicator	High level meaning: Unclear
Indicator 15: Indicator	High level meaning: Unclear
Indicator 16: Indicator	High level meaning: Unclear
Indicator 17: Indicator	High level meaning: Unclear
Indicator 18: Indicator	High level meaning: Unclear
Indicator 19: Indicator	High level meaning: Unclear
Indicator 20: Indicator	High level meaning: Unclear
Indicator 21: Indicator	High level meaning: Unclear
Indicator 22: Indicator	High level meaning: Unclear
Inputisation of weights and construction of aggregate scores	
Level assessment	
growth assessment	
Aggregate scores and policy and performance scores	
Aggregate scores and policy and performance scores	
Combined assessment	
Synthetic assessment (each component)	
Combined level assessment	
Combined growth assessment	
Final output tables	
Output tables 1: Aggregate scores both in level and change (step 3)	

Worksheet 5-8 only in the file "LAF Maquette-Older-Worker-labour-supply-12-08.xls"

A very detailed GDP decomposition (growth accounting) exercise has been developed for LAF: all data and computations have been made available in the LAF database. In terms of level, it decomposes GDP per capita into multiplicative components. In terms of growth, it decomposes GDP into additive contributions. The decomposition in level and in changes is made into 12 components, which fall into three main groups:

- *demographic components*: in level terms, the demographic component is computed in an *ad hoc* way as the average score of the three demographic components in level, so that they appear to average out.⁵ The fertility rate also complements the share of foreign population, as the former gives information on the future trend of the population. As regards changes/growth, the demographic component corresponds to the growth in the working age population, which can be obtained as the sum of the contributions of native population, migration and share of working-age population.
- *labour market components*: in level terms, this refers to the relative gap of the average hours worked per working-age person (aged 15-64). As regards changes, this measures

⁵ Strictly speaking the demographic component of GDP per capita is equal to the share of working age population, since the fertility rate and the share of foreign-born population are only displayed to put the score of native population growth and the growth contribution of migration into context (i.e. relating it to its starting condition).

the growth in average hours worked per working-age 15-64 person, which is the sum of the contributions of the participation of youth, prime age men and women and older workers, unemployment rate and working time. The contribution of the total participation rate is broken down by relevant age and gender groups: youth, prime-age men (aged 25-54), prime-age women, old-age workers (aged 55 and over);⁶

- *hourly labour productivity components*: in level terms, this measures the relative gap of hourly productivity vis-à-vis the EU15. Hourly productivity is defined as the ratio of GDP to total hours worked in the economy, and is a multiplicative decomposition where total factor productivity is defined as the Solow residual. As regards change, this refers to the growth in hourly productivity vis-à-vis the EU15, which could also be computed as the sum of the contributions of initial education of workers, capital deepening and total factor productivity.

Table 1: The components used in the GDP accounting

Decomposition of per capita GDP <i>12 items</i>	Decomposition of growth rate <i>12 items</i>
Fertility rate	Native population
Proportion of foreign population in total population (Eurostat)	Net migration
Working age population share in total population	Working age population share in total population
Youth Participation	Youth Participation
Male prime-age participation	Male prime-age participation
Female prime-age participation	Female prime-age participation
Older-worker participation	Older-worker participation
Unemployment rate	Unemployment rate
Working time (average hours worked per person) (Average Hours worked per person employed)	Working time (average hours worked per person) (Average Hours worked per person employed)
initial education (labour quality)	initial education (labour quality)
Capital deepening (capital <i>per working hour</i>)	Capital deepening (capital <i>per low-skilled working hour</i>)
Total factor productivity (Solow's residuals)	Total factor productivity (Solow's residuals)

Description of the sheets:

- GA data level: the first table provides the gap with the benchmark chosen in level of each GDP components for all the 27 countries. The second table gives the raw data considered to calculate the gap and a computation of weighted average for EU15, EU12, EU27, EU5 and EA 16, when not available in the database.
- GA data growth: gives the average growth decomposition between 2001 and 2007 for the 27 countries.
- GA level assessment and GA growth assessment: are the worksheets were the score is computed. Everything is automated.

⁶ The last two groups are particularly sensitive to policies e.g. childcare facilities, part-time employment regulation, flexible working time arrangements, the removal of fiscal distortions, reforms of old-age pension regimes and early-retirement schemes.

Figure 1: Growth accounting exercise

The screenshot shows an Excel spreadsheet titled "LAF Maquette-Older-Worker-labour-supply-12-08". The main content is a table with columns labeled A through R. The table is organized into several sections:

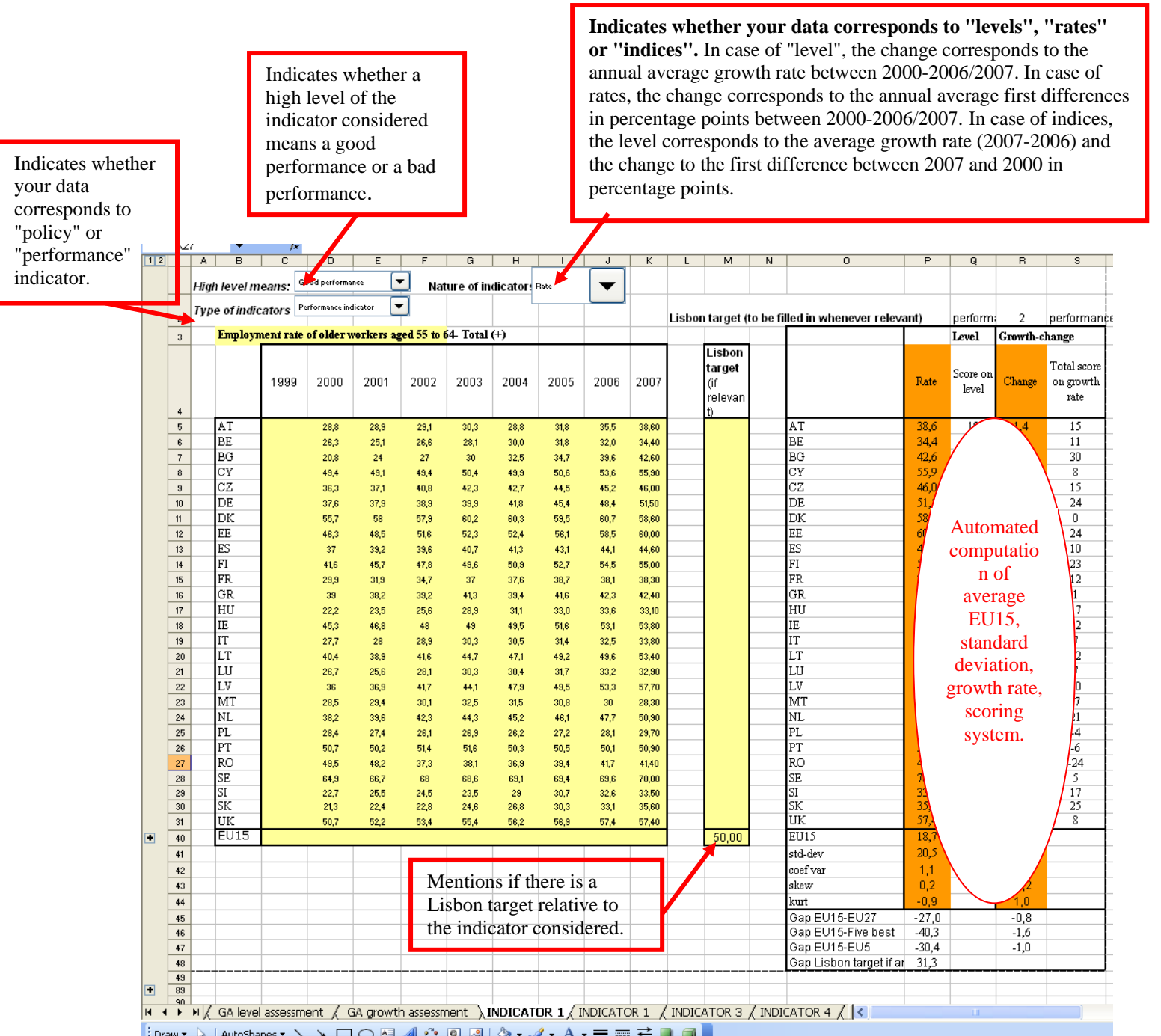
- Section 1 (Rows 1-4):** "Gap with in 2007" and "With the official order of country labels".
- Section 2 (Rows 5-17):** Headers for various indicators: GDP, LRU, CI, TFP, LQ, SWP, Unempl, AHWP, Npop, MI, YP, MP, FP, OP.
- Section 3 (Rows 18-33):** Data for individual countries: BE, BG, CZ, DK, DE, EE, IE, GR, ES, FR, IT, CY, LV, RO, LT, LU, HU, MT, NL, AT, PL, PT, RO, SI, SK, FI, SE, UK.
- Section 4 (Rows 34-39):** Data for EU aggregates: EU27, EU15, euro area 16, EU6, EU12, flexible bench, and std dev EU15.
- Section 5 (Rows 40-41):** Summary row with values for various indicators.
- Section 6 (Rows 42-44):** Summary row with values for various indicators.
- Section 7 (Rows 45-46):** Summary row with values for various indicators.
- Section 8 (Rows 47-48):** Summary row with values for various indicators.
- Section 9 (Row 49):** Summary row with values for various indicators.
- Section 10 (Row 50):** Summary row with values for various indicators.

Worksheet 5-26

These sheets compile the indicators used to assess the policy area (see figure 2). Until 22 indicators can be presented.

Figure 2 represents a typical worksheet where data on indicators can be found. It systematically shows the title of the indicator, the code of the indicator (policy or performance) and the interpretation of the indicator (i.e. meaning of a high level in terms of good or bad performance). For instance, the policy area entitled "*Specific labour supply measures for older-workers*", which we are using as an example throughout this note, is clearly related to the older worker employment rate indicator, a high level in the latter is a sign of good performance. We consider that a policy indicator is an indicator that is under direct government control, for example, the RandD expenditures (GERD) made by governments. A performance indicator depends not only of a government measure but also of the economic environment, for example, youth educational attainments.

Figure 2: Example of an indicator worksheet



Then the LAF database takes care of everything and report the results in the final table entitled "Output tables" that resume the scores of each indicators by country and gives the aggregation weights used to calculate the aggregate scores of the policy area.

Worksheet 27-28

These sheets derived excel calculations following the existing indicators of each policy area.

- Indic level assessment: calculates an aggregate score of the policy area by country (the results are the scores presented in the orange column Z) following the weights given to each indicator scores in level. It also computes automatically the number of individual

indicators with negative performance (below -4) in the LAF database, and the aggregate scores if we only consider the policy (or only performance) indicators.

- Indic growth assessment: is a similar sheet as the precedent worksheet but calculates aggregate scores of the policy area in change.

Worksheet 29-31

These sheets gives overview tables in a printer friendly version and easy to copy past in a word document.

- Output 1: presents the aggregate scores derived from individual indicators considered in level and change and the aggregate scores if we only consider the policy (or only performance) indicators.
- Output tables 3: It gives an overview of the situation of the 27 countries concerning one policy area. See figure below.
- Output table 4: is a similar sheet as the precedent worksheet but gives scores in change.

Figure 3: Overview of the assessment in the policy area.

All the information concerning each indicator are gathered in this table

Indicator based assessment for Belgium in specific labour supply measures for older worker policy area.

Table 3. Assessment of all available indicators in LEVEL		Specific labour supply measures for older-workers										Aggregate score on level	Number of individual indicators with negative performance
	Implicit tax on continued work(+)	Coverage of early retirement (-)	Life-long learning: Participation of the population aged 55-64 in education and training(+)	Average exit age from the labour force-total(+)	Difference between employment rate of older workers aged 55 to 64 and total 15-64 Men (+)	Difference between employment rate of older workers aged 55 to 64 and total 15-64 Women (+)	Life-long learning: Participation of the population aged 45-54 in education and training (EMCO)	Activity rate (55 to 64 years) (Eurostat) 1999-2006 (+)	Employment rate of older workers aged 55 to 64. Total (+)				
Direction of performance	Good performance	Bad performance	Good performance	Good performance	Good performance	Good performance	Good performance	Good performance	Good performance	Good performance			
Aggregation weights	1	1	0,5	0,25	0,25	0,25	0,5	0	0,25				
BE	-9,4	-30,0	-2,9	-3,4	-10,8	-17,3	-3,3	-14,6	-14,1	-13,5	3		
BG				-6,2	8,7	-3,6		-5,3	-6,0	-1,8	1		
CZ	4,7	-2,3	-5,0	-3,4	7,4	-5,8	-5,8	-0,7	-0,1	-0,9	1		
DK	6,4	-30,0	22,6	-1,4	7,4	4,8	19,9	14,6	16,4	1,1			
DE	8,3	0,7	-4,3	1,4	4,2	1,5	-4,8	6,7	3,4	1,8			
EE			-5,2	4,1	8,3	29,6	-14,8	12,4	14,0	2,0			
IE	4,5	-4,3	-2,7	20,6	12,3	2,7	-3,6	5,9	8,4	2,0			
GR	-30,0		-7,5	4,1	5,6	1,6	-10,1	-4,4	-3,2	-12,3			
ES	4,1	2,4	-1,4	9,9	5,2	-5,4	-2,1	-1,6	-1,2	1,6			
FR	-11,5	-1,8	-4,0	-15,8	-12,7	-1,7	-3,3	-7,8	-8,1	-6,6			
IT	-3,8	-2,0	-5,3	-9,6	-10,5	-5,3	-5,8	-14,8	-13,6	-5,3			
CY			-4,0	11,0	16,4	-3,8	-4,5	7,0	8,9	1,9			
LV			-5,3	6,9	12,0	15,1	4,5	8,6	8,6	2,9			
LT		-2,4	-5,4	-7,5	12,3	10,9	-13,3	4,4	4,6	-2,2			
LU	-30,0	-6,1	-3,3	-11,7	-20,6	-9,8	-3,8	-14,6	-12,8	-13,4			
HU	-3,5	2,2	-7,4	-8,9	-4,2	-4,5	-9,0	-13,3	-12,4	-4,3	2		
MT				-15,8	-6,7	-30,0	-15,1	-17,4	-16,2	-16,5	2		
NL	11,8		2,1	2,7	-5,1	-16,7	4,3	1,2	2,6	3,6	1		
AT	3,6	-20,6	1,3	-8,9	-17,3	-29,5	2,3	-11,5	-10,3	-7,9	2		
PL	9,7	-30,0	-6,7	-11,0	-4,3	-14,3	-8,3	-17,5	-18,3	-9,9	3		
PT	-20,1	0,7	-6,8	13,7	5,1	4,8	-8,8	5,0	5,1	-5,0	2		
RO				13,0	6,7	6,0	-11,0	-5,5	-3,8	0,0	1		
SI			-0,3	-17,8	-10,2	-30,0	0,8	-14,8	-13,5	-8,8	1		
SK	2,5	-5,5	-5,3	-13,0	3,0	-21,7	-7,5	-11,6	-12,9	-5,1	3		
FI	8,4	-24,5	11,0	4,1	4,0	16,5	14,1	10,0	9,9	1,3	1		
SE	0,0	2,8	29,4	17,8	22,9	30,0	25,4	24,1	25,9	13,6	0		
UK	5,0		18,1	10,3	11,4	9,5	18,5	10,6	12,9	11,4	0		
EU15	-6	0	6	61	-19	-22	9	48	45				
std-dev EU15	21	0	7	1	7	5	9	10	9				
Gap EU15-EU	-1	0	-1	0	0	1	0	1	1				
Gap EU15-five	31	0	3	2	9	7	5	12	10				
Gap EU15-EU	-15	0	-3	0	3	7	-4	-1	-2				
Gap Lisbon ta	irrelevant	irrelevant	7	4	irrelevant	irrelevant	3	irrelevant	5				

Worksheet 32-33

These sheets constitute the Annexe 1; it gives the raw data used in the calculation of every average in the whole LAF database.

- GDP: Additional data (GDP per millions PPS) used as country weights in the calculation of EU15 average (if non available in the indicators worksheet), EU27 average, EA16 average, EU 5 average, EU12 average and standard deviation. Reference year used is 2007.
- POP: Additional data (Numbers of population) used as country weights in the calculation of EU15 average (if non available in the indicators worksheet) and standard deviation. Reference year used is 2007.

Worksheet 34-36

These sheets constitute the Annexe 2; it refers to a correlation analysis.

- Correlation with the output gap.
- Correlation indicator matrix: gives the contemporaneous correlation between all indicators in the policy area.
- Correlation score matrix: presents a first table that displayed the instantaneous correlation between the indicator scores in level. The second table replicates the correlation analysis for the score in terms of changes.

Worksheet 37-38

These sheets only exist in the file entitled "LAF Maquette-Older-Worker-labour-supply-12-08.xls".

It corresponds to the Annexe 3 namely the cyclical analysis. The economic cycle may impact the results of the growth accounting. Therefore we have estimated the cyclical reaction of each growth component by regressing them on output gap from AMECO with a panel of 27 EU countries covering the period 1995-2005. These calculations are done in the LAF database. This method does not claim to be the best way of identifying the cyclical effects, but has the great merit of being applicable consistently to all twelve GDP components (unlike the Output Gap Working group method, which is more reliable and economically-sound), while remaining relatively clear and simple. Two adjustments have been experienced:

Adjusted for output gap in level and in first difference

- GA data gr (cycl-adj) Final pre: calculates the cyclically adjusted growth accounting (using output gap and CHANGE in output-gap) and impact of business cycle on each growth components.
- GA assessment (cycl-OG&DOG): the first table gives the scores based on cyclically-adjusted growth accounting (using output gap and change in output gap). The second table shows the impact of business cycle on the score of each growth contribution (using output gap and change in output gap).