

SICENTER
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MONITORING IMPLEMENTATION OF LISBON AND NRP TARGETS
WITH S-TIME-DISTANCE MEASURE

Analytical framework to think and compare in a new dimension: S-time-distance

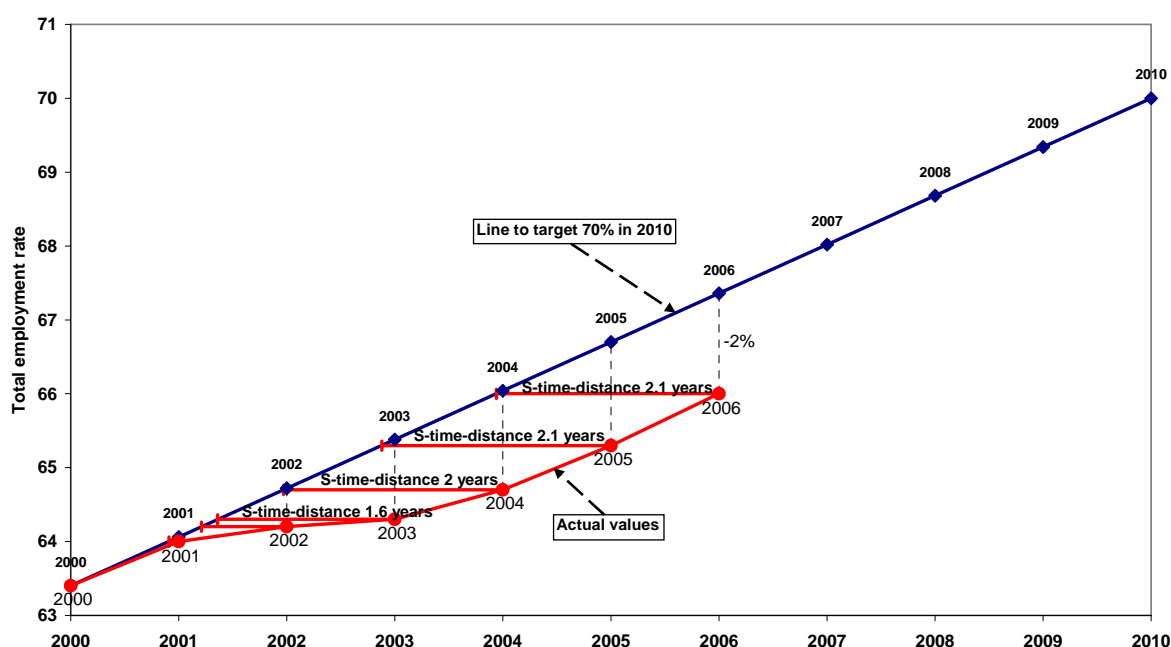
Comparisons play an important role in decision-making. In the analytical work leading to decisions there are two obvious types of comparisons with broad frequency of application:

1. Comparing with others across various aspects (benchmarking), and
2. **Analyzing actual implementation of individual targets (monitoring).**

Time, besides money, is one of the most important reference frameworks in a modern society. **Two time series can and should be compared in two dimensions** in order to better exploit various perspectives of the information available in existing databases:

1. Static gap at a given point in time, and
2. Gap in time for a given value of the variable.

Figure 1. Monitoring implementation of Lisbon target for total employment rate for EU15 with S-time-distance measure (in years)



S-time-distance measures the distance (difference, proximity) in time between the points in time when the two series compared reach a specified level of the indicator X.

For instance, for the value of GDP per capita for EU15 for 2005 in benchmarking we look into the USA time trend for this indicator and thus find that such level was achieved in the USA in 1987, which means that the value of S-time-distance for this level of the indicator amounts to 18 years.

The observed distance in time (the number of years, quarters, months, etc.) for given levels of the indicator is used as a temporal measure of disparity between the two series, in the same way that the observed difference (absolute or relative) at a given point in time is used as a static measure of disparity.

This immediate application to **monitoring the implementation** of the Lisbon strategy in two dimensions can easily be understood by everybody is and immediately operational for a very broad domain of applications. Let us take an example of application on the macro level by monitoring the implementation of the Lisbon targets for two indicators: total employment rate and growth rate of GDP for EU15. The Lisbon 1 targets were total employment rate of 70 percent in 2010 and 3 percent growth of GDP.

The necessary inputs are two time series (not necessarily continuous):

1. Time series of actual values of the variable, and
2. Time series for the assumed line to target.

The next step is to define how to specify the line to targets between the two established values. Three most interesting options are:

1. **Linear path to target**
2. **Exponential path to target**
3. **Optional path to target specified by the user**

Each user will in the input file in the row for line to target paste his calculations according to his assumptions. In these two examples linear path to target was assumed.

Monitoring implementation of total employment rate for EU15 in two dimension

	Actual EU15	Implied line to target 1 70% in 2010	Time on the line to target for the actual values	S-time-distance deviation of actual from line to target (in years)	Percentage deviation of actual from line to target
2000	63.4	63.40	2000	0	0
2001	64.0	64.06	2000.9	0.1	-0.1
2002	64.2	64.72	2001.2	0.8	-0.8
2003	64.3	65.38	2001.4	1.6	-1.7
2004	64.7	66.04	2002.0	2.0	-2.0
2005	65.3	66.70	2002.9	2.1	-2.1
2006	66.0	67.36	2003.9	2.1	-2.0
2007		68.02			
2008		68.68			
2009		69.34			
2010		70			
S-time-distance in years: - actual ahead of path to target, + actual behind the path to target					

$S(X_t)$ = actual time t – time on the line to target T for each actual value of the variable X_t

$S(X_t) = t(X_t) - T(X_t)$

$S(66.0_{2006}) = 2006(66.0_{2006}) - 2003.9(66.0_{2006}) = 2.1$ years

Monitoring implementation of GDP growth rate for EU15 in two dimension

	Actual EU15	Implied line to target: annual growth rate of GDP 3%	Time on the line to target for the actual values	S-time-distance deviation of actual from line to target (in years)	Percentage deviation of actual from line to target
2000	1	1	2000	0	0
2001	1.019	1.030	2000.6	0.4	-1.1
2002	1.030	1.061	2001.0	1.0	-2.9
2003	1.043	1.093	2001.4	1.6	-4.6
2004	1.067	1.126	2002.2	1.8	-5.2
2005	1.084	1.159	2002.7	2.3	-6.5
2006	1.114	1.194	2003.7	2.4	-6.7
2007	1.144	1.230	2004.6	2.5	-7.0
2008	1.173	1.267	2005.4	2.6	-7.4
2009		1.305			
2010		1.344			

S-time-distance in years: - actual ahead of path to target, + actual behind the path to target

$S(X_t) = \text{actual time } t - \text{time on the line to target } T \text{ for each actual value of the variable } X_t$

$S(X_t) = t(X_t) - T(X_t)$

$S(1.173_{2008}) = 2008(1.173_{2008}) - 2005.4(1.173_{2008}) = 2.6 \text{ years}$

Figure 2.

Monitoring implementation of Lisbon target for GDP growth rate of 3% for EU15 with S-time-distance measure (in years)

