

Appendix B5. Economic parameters

The cost year used in EConDA is 2013. In order to translate future costs and health outcomes to the year 2013, discount rates are used (Table 11). As mentioned, the sources of the discount rates are country-specific health-economic and pharmacoeconomic guidelines (1). In most countries, the same discount rate is used for both health outcomes and costs. Both The Netherlands and Poland use differential discounting, with a lower discount rate for the health outcomes than for the costs (2). No health-economic or pharmaco-economic guidelines have been published for Bulgaria or Greece. The discount rate of 3% for both health outcomes and costs is therefore based on recent three publications, all from Greece which all used 3%.(3-5)

All costs and prices that are used in EConDA, are also translated to the year 2013. This is done using the Harmonised Index of Consumer Prices (HICP) (

Table 1). The HICP is a consumer price index which is compiled according to a methodology that has been harmonised across all EU countries.

Table 1. Discount rates used in EConDA.

	Health outcomes	Costs	Source
Bulgaria	3.0%		(3-5)
Greece	3.0%		(3-5)
Finland	3.0%		(6)
Lithuania	3.0%		(7)
Netherlands	1.5%	4.0%	(8)
Poland	5.0%	3.5%	(9)
Portugal	5.0%		(10)
United Kingdom	3.5%		(11)

Table 2. Harmonised Index of Consumer Prices (HICP) used in EConDA.(12)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bulgaria	76,41	82,03	86,80	88,84	94,30	100,00	107,42	115,55	129,36	132,56	136,58	141,22	144,59	145,14
Finland	84,50	86,80	88,50	89,70	89,80	90,50	91,70	93,10	96,80	98,30	100,00	103,30	106,60	109,00
Greece	71,50	74,10	77,00	79,70	82,10	85,00	87,80	90,40	94,20	95,50	100,00	103,10	104,20	103,30
Lithuania	95,53	97,01	97,34	96,29	97,41	100,00	103,79	109,83	122,01	127,09	128,60	133,90	138,14	139,75
Netherlands	80,90	85,10	88,40	90,30	91,60	93,00	94,50	96,00	98,10	99,10	100,00	102,50	105,40	108,10
Poland	75,60	79,60	81,20	81,80	84,70	86,50	87,60	89,90	93,70	97,40	100,00	103,90	107,70	108,60
Portugal	78,50	82,00	85,00	87,80	90,00	91,90	94,70	97,00	99,50	98,60	100,00	103,60	106,40	106,90
United Kingdom	43,15	58,02	71,09	81,94	91,68	100,00	106,61	111,84	120,69	127,43	135,16	143,03	147,86	152,59

Table 3. Annual exchange rates against the US\$ used in EConDA.^{a,b}

	Currency	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
Bulgaria	лв	-	-	-	1.700	1.574	1.575	1.560	1.429	1.337	1.406	1.478	1.407	1.523	1.473
Finland	€	1.085	1.117	1.061	0.885	0.805	0.805	0.797	0.73	0.684	0.72	0.755	0.719	0.778	0.753
Greece	€	1.085	1.117	1.061	0.885	0.805	0.805	0.797	0.73	0.684	0.72	0.755	0.719	0.778	0.753
Lithuania	Lt ^c	4.003	4.000	3.671	3.058	2.776	2.780	2.752	2.523	2.360	2.482	2.610	2.483	2.689	2.600
Netherlands	€	1.085	1.117	1.061	0.885	0.805	0.805	0.797	0.73	0.684	0.72	0.755	0.719	0.778	0.753
Poland	zł	4.346	4.097	4.082	3.888	3.651	3.234	3.103	2.765	2.41	3.119	3.015	2.962	3.252	3.161
Portugal	€	1.085	1.117	1.061	0.885	0.805	0.805	0.797	0.73	0.684	0.72	0.755	0.719	0.778	0.753
United Kingdom	£	0.661	0.694	0.667	0.612	0.546	0.55	0.543	0.5	0.546	0.641	0.647	0.624	0.631	0.640

a All exchange rates based on official exchange rates from (12), except for the exchange rates of Bulgaria, Lithuania and 2013 all countries (69).

b The exchange rates for the Euro countries are necessarily the same.

c Lithuania uses the Euro from Jan 1, 2015. Lithuanian prices were therefore transformed to Euros using the fixed exchange rate of 3.4528 Lt per euro.

Table 4. Purchasing Power Parities (PPPs) used in EConDA.(68)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
Bulgaria ^a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Finland	0.994	1.01	1	1.01	0.976	0.977	0.949	0.941	0.918	0.9	0.911	0.907	0.925	0.93
Greece	0.677	0.67	0.66	0.689	0.696	0.714	0.698	0.719	0.701	0.695	0.702	0.693	0.684	0.643
Lithuania ^a	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands	0.892	0.905	0.902	0.927	0.909	0.896	0.867	0.858	0.842	0.838	0.849	0.832	0.842	0.826
Poland	1.84	1.86	1.83	1.84	1.86	1.87	1.84	1.84	1.86	1.86	1.82	1.82	1.85	1.82
Portugal	0.699	0.705	0.708	0.706	0.716	0.684	0.661	0.66	0.649	0.631	0.632	0.628	0.617	0.612
United Kingdom	0.635	0.626	0.628	0.641	0.633	0.636	0.626	0.646	0.651	0.653	0.691	0.698	0.703	0.695

a No PPPs available for Bulgaria and Lithuania. Proxies were used.

Country estimates of prices and costs are listed in the local currency. That means that for all countries, except for Bulgaria, Poland and the United Kingdom, Euros are used. Bulgaria uses the Bulgarian Lev (лв). Poland uses Polish Zloty (Zł). Prices in the United Kingdom are given in British Pounds (£). If country-specific estimates are available, but they are listed in a different currency, the prices are transferred using exchange rates (Table 3).

If no country-specific estimates are available, using exchange rates is not necessary, since these do not explicitly take the difference in price level into account. For this, Purchasing power parities (PPPs) were used to convert the prices of one country to another (Table 4). PPPs are the rates of currency conversion that equalise the purchasing power of different currencies by eliminating the differences in price levels between countries. In their simplest form, PPPs are simply price relatives which show the ratio of the prices in national currencies of the same good or service in different countries.

Since no PPPs are available for Bulgaria and Lithuania, the prices are translated to other country currencies using the PPPs of Greece, which in turn are then translated to Bulgarian and Lithuanian currencies using existing exchange rates (Table 2).

As an example of how the HICP, exchange rates and PPPs have been applied in EConDA, we estimate the direct health care costs per patient year of hypertension in Lithuania. The Dutch Cost of Illness study estimates the costs for hypertension in The Netherlands at € 182.90 (13). The cost year for this study was 2011. Using the PPPs in 2011 (Table 4), we transfer the costs at the Dutch price level, to the costs at the Greek price level:

$$\begin{aligned} <Cost> * <PPP new> / <PPP old> \\ &= € 182.90 * 0.693 / 0.832 = € 152 \end{aligned}$$

Next, these costs are immediately transferred to Lithuanian Litas, the currency at that time, using the official exchange rate (Table 3):

$$\begin{aligned} <Cost> * <exchange rate against US$ new> / < exchange rate against US$ old> \\ &= € 152 * 2.483 / 0.719 = Lt 526 \end{aligned}$$

These costs are now in the cost year 2011, and need to be inflated to the cost year 2013. This is done by using the HICP (Table 2):

$$<Cost> * <HICP new> / <HICP old> = Lt 526 * 139.75 / 133.90 = Lt 549$$

Since Lithuania uses the Euro, the official exchange rate against the Euro (3.4528 Litas for a Euro) is then applied:

$$\langle \text{Cost} \rangle / 3.4528 = \text{Lt } 549 / 3.4528 = \text{€ } 159$$

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