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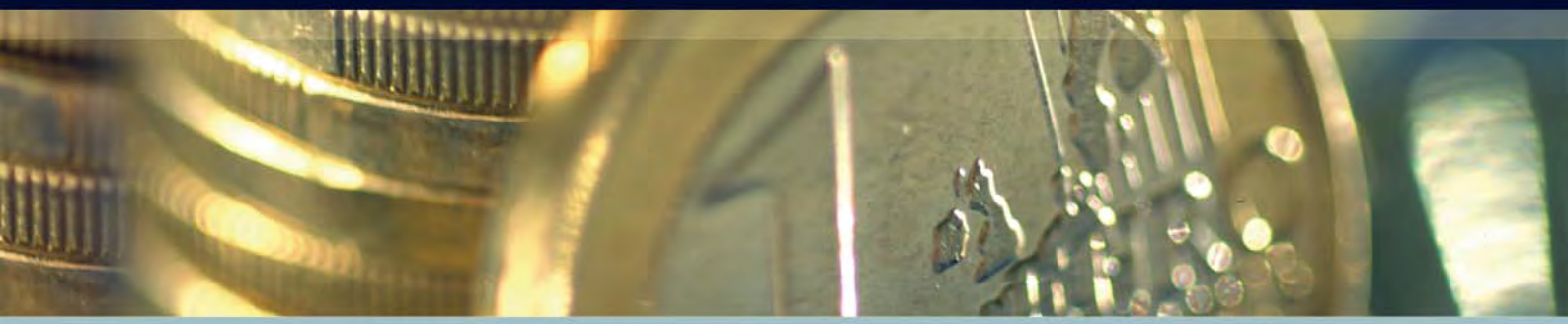

The Potential Impact of EU Cohesion Policy Spending in the 2007-13 Programming Period:

A Model-Based Analysis

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The Potential Impact of EU Cohesion Policy Spending in the 2007-13 Programming Period: A Model-Based Analysis *

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Abstract

EU Cohesion policy supports investment in infrastructure, R&D and human capital in Europe's poorer regions. This paper provides a model-based assessment of the potential macro-economic impact of these fiscal transfers using a microfounded dynamic general equilibrium model with semi-endogenous growth and endogenous human capital accumulation. The simulations show the potential benefits of Structural Funds with significant output gains in the long run due to sizeable productivity improvements. Co-financing conditions are found to raise the long term output effects. Delays in spending profiles lead to lower gains.

JEL Classification System: C53, E62, O30, O41
Keywords: Cohesion Policy, endogenous growth, R&D, dynamic general equilibrium modelling.

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1. Introduction

The Cohesion Policy Programmes of the European Union provide a framework for large fiscal transfers from the richer EU Member States to the countries and regions that lag behind in terms of income per capita. These European Cohesion and Structural Funds target public and private investment in physical and human capital, and are designed to increase economic and social cohesion among member states, enhancing a faster catch-up process of the less developed member states. With a budget of 336 billion euro for the 2007-13 programme period it represents more than a third of the EU budget. Just over half of the total, 177 billion euro, is available for the New Member States that joined in 2004.

This paper uses a micro-founded Dynamic General Equilibrium (DGE) model to evaluate the potential impact of Structural and Cohesion Fund programmes for the largest recipient Member States of the European Union for the period 2007-2013. The model employed is based on the QUEST III model[1]. We use here an extended version of this model with human capital accumulation and endogenous technological change. This version of the model has been used extensively for the analysis of structural reforms in the EU (Roeger, Varga and in 't Veld, 2008) and is particularly suitable for an evaluation of the type of structural policies that form the core of Cohesion Policy interventions. The model incorporates productive infrastructure investment that captures the productivity-enhancing effects of public capital. It also employs the product variety framework proposed by Dixit and Stiglitz (1977) and applies the Jones (1995) semi-endogenous growth framework to explicitly model the underlying development of R&D. The endogenous modelling of R&D allows us to analyse the impact of R&D promoting policies on growth. Furthermore, the endogeneity of human capital accumulation in the model can capture the effects of policies promoting vocational education and training. The model covers each of the EU27 member states, plus one region representing the rest of the world. The explicit modelling of cross-country linkages through bilateral trade relationships allows us to capture spillovers of cohesion spending and interactions between EU member states, both for the beneficiaries as well as the donor countries.

These fiscal transfers show strong similarities to official development assistance given to low-income countries and the economic arguments in favour of it are similar. There is a long and inconclusive literature on aid and economic growth and considerable debate about the specification and the mechanisms by which aid could affect growth. The effect on the terms of trade is frequently mentioned as critical factor. Boone (1996) concluded that aid often financed consumption rather than investment and that the growth benefits of aid were therefore limited. Burnside and Dollar (2000) stressed the importance of the policy environment. They argued aid only works in a good policy environment, and this gave a new impulse to this literature (for a review see Hansen and Tarp (2000) and Easterly (2003)). Although there is general scepticism on inflated claims on the growth dividend of aid, there seems to be a growing consensus that aid can boost growth by increasing total savings.

Concerning EU Cohesion Policy, Herve and Holzmann (1998) provide a detailed analysis of potential "absorption" problems in receiving countries. They identify several factors that could lead to such a sub-optimal use of fiscal transfers, in particular rent-seeking activities

[1] The QUEST III model is used by the Directorate-General Economic and Financial Affairs of the European Commission for economic policy analysis. For a description of the core model, see Ratto, Roeger and in 't Veld (2009).

and diversion of funds to consumption. They claim these absorption problems are of empirical relevance and that their scope may be very high. In some cases, transfers "may be unquestionably detrimental to economic growth and real convergence" (ibid, p.14) with as most likely cause rent seeking, protectionism and market rigidities. They also argue that absorption problems are likely to increase with the amount of transfers.

Ex-ante model-based assessments cannot provide evidence on the positive output effects of fiscal transfers, but can shed light on the potential channels through which these policies could have an impact. Many of the mechanisms highlighted by Herve and Holzmann (1998) can be captured in a microfounded dynamic general equilibrium model, and their relative importance can be assessed. However, the long term growth effects depend crucially on the precise nature of the projects that are financed, and only detailed project evaluations can provide evidence on that. Although a detailed breakdown of spending is used in this exercise, a disaggregation to the project-level of cohesion expenditure is not feasible with a macroeconomic model. Results depend on model parameterisation, and in particular on assumed productivity parameters of infrastructure and human capital investment. Although these estimates will correspond to what is commonly assumed in the economic literature, there is a wide range of uncertainty surrounding these estimates. Results based on common estimates from the literature can give an idea of the *potential* impact of spending if all the money is directed towards productive projects and none is wasted. However, incentives given by the availability of large scale transfers could generate more rent-seeking behaviour and thus yield a lower return on investments. To the extent that this applies to cohesion spending, results reported in this paper should be interpreted as providing an upper bound of the potential benefits.

We consider two further issues relevant for EU Cohesion policy. First, the conditions of co-financing and additionality have been called into question due to the financial crisis. The European Union only pays up to 85 percent of each funded programme, and governments have to add to this from their own budgets. However, due to the economic crisis several Member States have had little room for manoeuvre to co-fund additional projects, and changes in the regulations allow for acceleration and advance payments from EU funds to ensure the availability of financial resources during the crisis although Member states will still have to pay back the required co-financing at a later stage within the 2007-2013 framework. We use the model to examine the impact of this co-financing condition and how it affects overall results. A second issue is the long delays in spending due to implementation lags. While each country is allocated funding ("decided amounts") over the period 2007-13, past experience has shown spending is much delayed and typically spread over many more years. In fact, spending in the first three years of this programming period has been extremely low. These delays may be inevitable due to the strict conditions which projects are subject to, but it means potential benefits of this funding are not reaped to the full.

The paper is organized as follows. The next section briefly discusses past empirical evaluations of EU Cohesion policy. Section 3 gives an overview of the Structural and Cohesion Funds programmes and the payment profiles. Section 4 describes the core features of the model that are crucial for the analysis of this type of productive investment. In section 5 the model results for the receiving countries are presented. Section 6 presents a sensitivity analysis with respect to the assumed output elasticity of public investment, while in section 7 we consider the effects of the co-financing requirement and a faster spending profile. Section 8 concludes.

2. Empirical assessments of Cohesion Policy

Empirical studies of EU Cohesion Policy have generally given only mixed support for positive effects from large transfers. While there has been strong catching-up of some assisted regions in terms of per capita incomes, it is not evident to what extent this can be attributed to Structural Funds interventions and there are many other assisted regions that have remained relatively poor. Growth regressions augmented with Structural Fund variables show generally no significant impact from these transfers. Boldrin and Canova (2001) conclude that there is no evidence that structural and cohesion funds regions behave differently from others or display any form of systematic catching-up with the rest of regional income distribution. Cappelen *et al.* (2003) find some evidence that EU regional policy has become more effective in its aim to generate growth and contribute to greater equality in productivity and income in Europe, but their estimates suggest that growth in poorer regions is greatly hampered by an unfavourable industrial structure (dominated by agriculture) and lack of R&D. This supports the view that fiscal transfers should be accompanied by policies that facilitate structural change and increase R&D capabilities in poorer regions. Ederveen *et al.* (2002) and Ederveen, Groot and Nahuis (2006) conclude that Structural Funds are on average ineffective but that there are exceptions to this conclusion for countries with the 'right' institutions, like openness, institutional quality, corruption and indicators of good governance. Checherita, Nickel and Rother (2009) find that while net fiscal transfers contribute to reducing disparities in income available to households at the regional level - and thus achieve their intended distributional goal - they also impede output growth, i.e. there is a negative impact of net transfers on growth in receiving regions and small contributors, and a negative impact, as well, of net taxes on growth in paying regions (the big contributors). The authors suggest this may point to an “immiserising convergence” with output growth rates in receiving poor regions declining by less than in paying rich regions in reaction to the tax-transfer scheme. Note that the fact that fiscal transfers contribute to reducing regional disparities in disposable income, but not in reducing disparities in output per capita indicates that there could be a trade-off between distributional policies and policies targeted to growth and economic convergence.

Studies based on macro-economic models have also shown varying results. Earlier studies have often been based on HERMIN models of the beneficiary countries (e.g. Bradley and Fitzgerald (1988), Bradley, Herce and Modesto (1995)). These single-country econometric models typically generate large positive output and employment effects of cohesion spending, not just in the long run, but already in the very short run, due to traditional Keynesian effects. Short run multipliers in these econometric models are often very large. But these effects are derived from reduced form equations that lack the microfoundations that have become standard in macromodelling. With external demand, interest rates and exchange rates exogenous the output effect in HERMIN country models is directly determined by the given increase in absorption and the assumed long run output and productivity parameters. In contrast, in an earlier application to Cohesion spending we applied the QUEST II model, a macroeconomic model that was a predecessor of the present QUEST III DSGE model (in 't Veld, 2007). Although that model lacked the full rigourous derivation from micro principles that has become common in modern models, the main behavioural equations in that model were derived from intertemporal optimisation. Model simulations showed smaller short run effects from cohesion spending due to offsetting effects from among other things changes in the terms of trade. However, long run output effects from spending were also significant and persistent.

The DGE model used is this paper has earlier been applied to an evaluation of Cohesion spending in the period 2000-06 (Varga and in 't Veld, 2009b)[2]. To our knowledge the only other application of a micro-founded dynamic general equilibrium models to cohesion policy is Allard et al. (2008) who use the GIMF model of the IMF. They pay particular attention to the ongoing convergence process of the NMS and compare the impact of EU transfers to households to public infrastructure investment, finding a stronger impact of the latter on long term growth. QUEST and GIMF are similar in that both are micro-founded global open-economy models and similar mechanisms are at play in these models. Utility maximising households smooth their consumption and this leads to a lower impact of transfers in the short run, while public investment boosts productivity and generates higher growth in the medium run. The main difference is that in the version of the QUEST III model used here the supply side effects are modelled in greater detail with human capital accumulation and endogenous technological change.

3. The European Union's Cohesion Policy programme 2007-13

The European Union's Cohesion Policy exists of three main funds: the European Fund for Regional Development (EFRD), the European Social Fund (ESF) and the Cohesion Fund (CF). The first two are also refered to as Structural Funds. The three funds contribute to three objectives of cohesion policy: convergence, regional competitiveness and employment, and European territorial cooperation.

The rationale of the Convergence objective is to promote growth-enhancing conditions and factors leading to real convergence for the least-developed Member States and regions (EFRD, ESF and CF). The Regional Competitiveness and Employment objective aims at strengthening competitiveness and attractiveness, as well as employment, (EFRD and ESF) while the European Territorial Co-operation objective aims to strengthen cross-border co-operation (EFRD).

Allocated funds

For the period 2007 to 2013, Structural and Cohesion Funds programmes amount to a total budget of 336.5 billion euros (in 2008 prices). The New Members States receive 173.9 billion euros (in 2008 prices). Spain, Greece and Portugal receive 76 bln. euros and a further 26 bln euros is allocated to Germany (Eastern Lander) and Italy (Mezzogiorno). The remainder of the funding goes to regions in other EU Member States (including other regions in Germany and Italy). Table 1 shows the allocation of funds that has been decided per Member State and per year. In the simulations in this paper the focus is on the New Member States, plus Spain, Portugal, Greece, Italy (Mezzogiorno) and Germany (East).[3]

[2] In Varga and in 't Veld (2009a) we used an aggregate version of this model for an assessment of Cohesion spending in the 2007-13 period.

[3] We focus on this subgroup of countries at the request of DG REGIO, who in their 5th Cohesion Report only consider this subgroup because the model they use, HERMIN, only has models for these countries and regions.

Table 1. EU Cohesion Policy expenditure per Member State, in mln. euros

	2007	2008	2009	2010	2011	2012	2013	TOTAL
BG	491	713	967	1 019	1 090	1 161	1 233	6 674
CY	164	135	106	75	43	44	45	612
CZ	3 011	3 684	3 587	3 754	3 921	4 088	4 258	26 303
DE	1 751	1 760	1 769	1 777	1 785	1 792	1 799	12 434
EE	370	403	439	479	522	570	621	3 403
ES	6 222	5 680	5 113	4 634	4 363	4 337	4 308	34 658
GR	3 058	2 999	2 937	2 871	2 801	2 783	2 763	20 210
HU	2 985	3 177	3 384	3 570	3 728	3 933	4 145	24 921
IT	1 879	1 909	1 940	1 970	2 002	2 034	2 066	13 800
LT	753	819	887	960	1 036	1 119	1 202	6 775
LV	496	542	591	643	696	752	810	4 530
MT	112	115	118	120	123	125	127	840
PL	8 033	8 566	9 113	9 337	9 650	9 962	10 561	65 222
PT	2 959	2 992	3 025	3 059	3 092	3 126	3 159	21 412
RO	1 275	1 854	2 513	3 027	3 264	3 512	3 768	19 213
SI	541	555	570	585	601	617	633	4 101
SK	1 270	1 376	1 495	1 630	1 752	1 873	1 966	11 361
sub-total	35 370	37 280	38 553	39 510	40 468	41 826	43 463	276 469
other M.S.	8 544	8 656	8 555	8 518	8 477	8 582	8 689	60 021
TOTAL	43 914	45 936	47 108	48 028	48 945	50 409	52 152	336 490

Payments profile with implementation lags

However, past experience in previous programme periods have shown considerable delays in member states submitting programmes as well as delays in decision taking. Typically delays in payments continued for up to two or three years after the programming period. To take this into account, the payment profile assumed in this paper is not based on the "decided amounts" as shown in table 1 above, but instead based on past payments profiles, spread over a 10 year period from 2007 to 2016 (Table 2.a). On the basis of this payment profile in programming prices, assuming an inflation correction of 2 per cent per year, and using the European Commission's nominal GDP projections for 2010-16, we calculate the proposed annual payment profile in terms of GDP for 2007-2016 (Table 2.b).

Infrastructure investment receives the largest share of funds, more than 60% of the total budget for most NMS, while investments in R&D and human capital are the second or third largest categories (Table 3). The fields of intervention cover a wide range of policy programmes, details of which are shown in the annex (Table A1)

Table 2.a EU Cohesion Policy expenditure per Member State: assumed payment profile (in mln. Euros)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
BG	145	223	267	637	646	652	658	1 066	1 059	1 321
CY	13	20	59	42	52	65	79	85	92	104
CZ	368	1 078	1 394	2 034	2 896	3 192	3 487	3 814	3 866	4 182
DE	249	410	1 747	1 408	1 690	1 754	1 651	1 748	1 464	311
EE	74	113	454	334	410	413	416	371	330	487
ES	693	1 040	1 317	4 777	4 710	4 434	3 201	4 817	3 570	6 100
GR	400	600	1 144	1 096	1 983	1 893	2 674	3 537	3 577	3 314
HU	548	847	1 894	2 466	3 206	3 436	3 666	2 816	1 695	4 336
IT	276	414	386	1 547	1 520	1 697	1 951	2 084	1 490	2 429
LT	149	230	1 057	497	546	742	937	901	962	752
LV	100	154	426	347	355	569	783	680	521	598
MT	18	29	35	59	89	135	181	145	102	46
PL	1 370	2 218	5 022	4 535	6 179	7 981	9 782	9 066	8 153	10 892
PT	428	642	1 713	2 784	2 864	2 400	2 127	2 719	2 612	3 126
RO	1 626	1 642	1 699	1 712	1 735	1 752	1 769	2 431	2 414	2 433
SI	90	139	328	404	502	451	401	496	541	746
SK	250	386	523	903	1 077	1 318	1 559	1 852	1 909	1 579

Table 2.b EU Cohesion Policy expenditure per Member State: assumed payment profile (as % of GDP)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
BG	0.50	0.65	0.80	1.89	1.81	1.76	1.71	2.67	2.55	3.06
CY	0.08	0.12	0.34	0.23	0.28	0.33	0.39	0.40	0.42	0.46
CZ	0.29	0.73	1.04	1.46	2.00	2.12	2.22	2.34	2.28	2.37
DE	0.01	0.02	0.07	0.06	0.07	0.07	0.06	0.06	0.05	0.01
EE	0.47	0.71	3.28	2.49	2.88	2.80	2.72	2.33	1.99	2.82
ES	0.07	0.10	0.13	0.46	0.44	0.40	0.28	0.40	0.28	0.46
GR	0.18	0.25	0.48	0.45	0.79	0.73	1.01	1.29	1.26	1.14
HU	0.54	0.80	2.06	2.52	3.13	3.26	3.38	2.52	1.48	3.67
IT	0.02	0.03	0.03	0.10	0.09	0.10	0.11	0.12	0.08	0.13
LT	0.52	0.72	4.06	2.02	2.15	2.87	3.51	3.27	3.39	2.57
LV	0.47	0.67	2.30	2.06	2.09	3.30	4.42	3.72	2.77	3.08
MT	0.34	0.50	0.62	1.01	1.46	2.16	2.84	2.21	1.53	0.68
PL	0.44	0.61	1.63	1.34	1.72	2.11	2.48	2.20	1.89	2.43
PO	0.26	0.39	1.06	1.70	1.70	1.38	1.17	1.43	1.32	1.51
RO	1.30	1.17	1.42	1.32	1.24	1.20	1.16	1.54	1.47	1.42
SI	0.26	0.38	0.92	1.11	1.33	1.15	0.98	1.16	1.21	1.60
SK	0.46	0.60	0.79	1.30	1.47	1.72	1.95	2.22	2.20	1.74

Note: Planned payment profile, as % of GDP.
Source: European Commission

Table 3. Areas of intervention, as % of total

	support industry&services	Human resources	Infrastructure	RTD	technical assistance
BG	8.36	20.89	62.50	4.67	3.58
CY	14.99	20.45	50.95	10.03	3.58
CZ	8.39	15.56	61.09	11.58	3.38
DE	23.12	22.43	31.07	20.83	2.56
EE	8.04	10.87	62.31	16.75	2.04
ES	12.10	21.54	50.47	14.74	1.15
GR	6.83	21.53	63.52	5.69	2.42
HU	13.18	15.12	61.92	5.91	3.87
IT	16.54	18.22	54.80	8.60	1.83
LT	8.06	13.45	62.23	13.26	3.00
LV	4.13	11.49	67.81	14.07	2.51
MT	14.40	12.82	65.96	5.30	1.52
PL	7.81	13.67	63.00	11.94	3.58
PT	10.47	32.22	40.78	13.60	2.93
RO	8.95	18.62	65.19	3.65	3.59
SI	9.01	15.82	54.42	18.65	2.09
SK	5.43	11.75	70.05	9.32	3.44

Table 4 Assumed EU15 contributions to financing costs EU Cohesion Policy (as % of GDP)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
EU15 (% of GDP)	0.05	0.06	0.14	0.18	0.21	0.21	0.21	0.23	0.19	0.23

Financing costs

For assumptions on the financing of EU Cohesion Policy expenditure we can unfortunately not rely on available datasources. Cohesion Policy expenditure is part of the larger EU budget but a detailed modelling of Member States' contributions falls outside the scope of this paper. Instead we assume EU Cohesion Policy expenditure is financed by additional contributions to the EU budget by only those member states that were part of the EU prior to the enlargement in 2004. The budget contributions of these EU15 member states are assumed to be proportional to GDP and are assumed to be financed through increases in labour taxes. The costs of Cohesion Policy for these donor countries amounts to approximately 0.2 % of these countries' GDP (see Table 4). Net cohesion receipts of Spain, Portugal, Greece, Germany and Italy are defined as the difference between their gross receipts (as reported in Table 2.b) and their contributions to the EU budget to finance Cohesion Policy (Table 4). Germany and Italy receive less Cohesion support than they are assumed to contribute in this exercise to the overall costs of EU Cohesion Policy (net cohesion receipts are negative).

4. Model description

We use a New-Keynesian dynamic general equilibrium model to evaluate the impact of EU Cohesion spending. The structure of the model is described in Roeger, Varga and in 't Veld (2008) and for an application to Cohesion policy see Varga and in ’t Veld (2009). The model is an otherwise standard DSGE model but with human capital accumulation and endogenous technological change. The model economy is populated by households, final and intermediate goods producing firms, a research industry, a monetary and a fiscal authority. In the final goods sector firms produce differentiated goods which are imperfect substitutes for goods produced abroad. Final good producers use a composite of domestic and imported intermediate goods and three types of labour - low-, medium- and high-skilled. Households buy the patents of designs produced by the R&D sector and license them to the intermediate goods producing firms. The intermediate sector is composed of monopolistically competitive firms which produce intermediate products from rented capital input using the designs licensed from the household sector. The production of new designs takes place in research labs, employing high skilled labour and making use of the existing stock of domestic and foreign ideas. Technological change is modelled as increasing product variety in the tradition of Dixit and Stiglitz (1977).

The model distinguishes two types of households. The first group of households have access to financial markets where they can buy and sell domestic and foreign assets (government bonds), accumulate physical capital which they rent out to the intermediate sector, and they also buy the patents of designs produced by the R&D sector and license them to the intermediate goods producing firms. Other households are liquidity-constrained, cannot trade in financial and physical assets and consume their disposable income each period. We distinguish three skill groups of labour, low-, medium- and high-skilled. For each skill group we assume that households supply differentiated labour services to unions which act as wage setters in monopolistically competitive labour markets. The unions pool wage income and distribute it in equal proportions among their members. Nominal rigidity in wage setting is introduced by assuming that households face adjustment costs for changing wages.

The model consists of 28 regions (each of the 27 EU Member States and one region representing the rest of the world). The country models are linked together using bilateral trade data of 2008 (GTAP database).

In this section we describe in more detail the modelling of production, human capital and the government budget constraint, which constitute the key elements for modelling the Structural Funds interventions. One particular extension to the model made here is an explicit formulation of human capital accumulation following Jones (2002) in order to account for the significant part of Structural Fund investments in various human resource programmes. For a more detailed description of the model, see Roeger et al (2008) and Varga and in ’t Veld (2009b). A detailed analysis of the calibration to country data can be found D'Auria *et al.* (2009)[4].

[4] One difference with previous applications of this model to Cohesion spending is the assumed share of liquidity-constrained households. In Varga and in ’t Veld (2009b) this was set equal to the share of low-skilled workers, but due to cross-country differences in skill definitions this yielded large variations in this parameter. Here we set this share to 0.4, which is at the top end of the range of estimated values for the share of non-Ricardian behaviour in DSGE models which typically ranges from 0.25-0.4. A sensitivity analysis reported in Varga and in ’t Veld (2009b) showed that the values of this parameter had no significant impact on results, because the spending is financed by transfers from abroad and hence does not affect expected future tax liabilities.

4.1. Households

A share of households are liquidity-constrained (so-called "rule-of-thumb" consumers), who cannot trade in financial and physical assets and consume their disposable income each period. The other households are non-constrained and have full access to financial markets where they can buy and sell domestic and foreign assets (government bonds), accumulate physical capital which they rent out to the intermediate sector, and they also buy the patents of designs produced by the R&D sector and license them to the intermediate goods producing firms. Each non-constrained household maximise an intertemporal utility function in consumption and leisure subject to a budget constraint. These households make decisions about consumption, labour supply, investments into domestic and foreign financial assets, the purchases of investment good, the renting of physical capital stock, the corresponding degree of capacity utilisation, the purchases of new patents from the R&D sector, and the licensing of existing patents (A_t^i), and receive wage income, unemployment benefits[5], transfer income from the government and interest income. All firms of the economy are owned by these non-constrained households who share the total profit of the final and intermediate sector firms. All households pay wage income taxes and capital income taxes less tax credits and depreciation allowances after their earnings on physical capital and patents. There is no perfect arbitrage between different types of assets. When taking a position in the international bond market, households face a financial intermediation premium which depends on the economy-wide net holdings of internationally traded bonds. Also, when investing into tangible and intangible capital households require risk premia rp_t^K and rp_t^A in order to cover the increased risk on the return related to these assets.

4.2. Final goods production and public capital

We account for the productivity-enhancing effect of infrastructure investment via the following aggregate final goods production function:

$$Y_t = A_t^{(1-\alpha)\left(\frac{1}{\theta}-1\right)}\left(K_t^P\right)^{1-\alpha}\left(L_{Y,t}\right)^{\alpha}\left(K_t^G\right)^{\alpha_G} - FC_Y, \quad \text{where} \sum_{i=1}^{A_t} x_{i,t} = K_t^P \tag{1}$$

The final good sector uses a labour aggregate ($L_{Y,t}$) and intermediate goods ($x_{i,t}$) using a Cobb-Douglas technology, subject to a fixed cost FC_Y . Our formulation assumes that investment in public capital stock (K_t^G) increases total factor productivity with an exponent of α_G set to 0.10.

Public infrastructure investment (I_t^G) accumulates into the public capital stock K^G according to

$$K_t^G = (1-\delta_G)K_{t-1}^G + I_t^G \tag{2}$$

[5] Notice, households only make a decision about the level of employment but there is no distinction on the part of households between unemployment and non participation. It is assumed that the government makes a decision how to classify the non-working part of the population into unemployed and non-participants. The non - participation rate *NPART* must therefore be seen as a policy variable characterising the generosity of the benefit system.

where δ_G, the depreciation rate of public capital is set at 4 per cent. Infrastructure investment is assumed to be proportional to output

$$I_t^G = (IGS_t + \varepsilon_t^{IG})Y_t \tag{3}$$

where ε_t^{IG} is an exogenous shock to the share of government investment (IGS_t). It is through this shock that we simulate the increase in infrastructure investment.

4.3. Intermediate production and the R&D sector

The intermediate sector consists of monopolistically competitive firms which have entered the market by buying licenses for design from domestic households and by making an initial payment FC_A to overcome administrative entry barriers. Capital inputs are also rented from the household sector for a rental rate of i_t^K . Firms which have acquired a design can transform each unit of capital into a single unit of an intermediate input. Intermediate goods producing firms sell their products to domestic final good producers. In symmetric equilibrium the inverse demand function of domestic final good producers is given as

$$px_{i,t} = \eta_t(1-\alpha)Y\left(\sum_{i=1}^{A_t}\left(x_{i,t}^j\right)^\theta\right)^{-1}\left(x_{i,t}\right)^{\theta-1} \tag{4}$$

where η_t is the inverse gross mark-up of the final goods sector.

Each domestic intermediate firm solves the following profit-maximisation problem.

$$PR_{i,t}^x = \max_{x_{i,t}}\left\{px_{i,t}x_{i,t} - i_t^K P_t^C k_{i,t} - i^A P_t^A - FC_A\right\}. \tag{5}$$

subject to a linear technology which allows to transform one unit of effective capital ($k_i \cdot ucap$) into one unit of an intermediate good $x_i = k_i$.

The no-arbitrage condition requires that entry into the intermediate goods producing sector takes place until

$$PR_{i,t}^x = PR_t^x = i_t^A P_t^A + \left(i_t^A + \pi_{t+1}^A\right)FC_t^A \tag{6}$$

or equivalently, the present discounted value of profits is equated to the fixed entry costs plus the net value of patents

$$P_t^A \frac{1}{1-t_t^K\left(1-\delta^A\right)+\tau^A} + FC_A = \sum_{\tau=0}^{\infty}\prod_{j=0}^{\tau}\left(\frac{1}{1+r_{t+j}}\right)PR_{t+\tau}^x. \tag{7}$$

For an intermediate producer, entry costs consist of 1. the licensing fee $i_t^A P_t^A$ for the design or patent, which is a prerequisite of production of innovative intermediate goods, and 2. the fixed entry cost FC_A.

Innovation corresponds to the discovery of a new variety of producer durables that provides an alternative way of producing the final good. The R&D sector hires high-skilled labour $L_{A,t}$ and generates new designs according to the following knowledge production function:

$$\Delta A_t = \nu A_{t-1}^{*\varpi} A_{t-1}^{\phi} L_{A,t}^{\lambda}. \quad (8)$$

In this framework we allow for international R&D spillovers following Bottazzi and Peri (2007). Parameters ϖ and ϕ measure the foreign and domestic spillover effects from the aggregate international and domestic stock of knowledge (A^* and A) respectively. Negative value for these parameters can be interpreted as the "fishing out" effect, i.e. when innovation decreases with the level of knowledge, while positive values refer to the "standing on shoulders" effect and imply positive research spillovers. Note that $\phi = 1$ would give back the strong scale effect feature of fully endogenous growth models with respect to the domestic level of knowledge. Parameter ν can be interpreted as total factor efficiency of R&D production, while λ measures the elasticity of R&D production on the number of researchers (L_A). The international stock of knowledge is taken into account as the weighted average of all foreign stock of knowledge. We assume that the R&D sector is operated by a research institute which employs high skilled labour at their market wage W^H. We also assume that the research institute faces an adjustment cost of hiring new employees and maximizes the following discounted profit-stream:

$$\max_{L_{A,t}} \sum_{t=0}^{\infty} d_t \left(P_t^A \Delta A_t - W_t^H L_{A,t} - \frac{\gamma_A}{2} W_t^H \Delta L_{A,t}^2 \right) \quad (9)$$

Therefore the first order condition implies:

$$\lambda P_t^A \frac{\Delta A_t}{L_{A,t}} = W_t^H + \gamma_A \left(W_t^H \Delta L_{A,t} - d_t W_{t+1}^H \Delta L_{A,t+1} \right) \quad (10)$$

where d_t is the discount factor.

4.4. Human capital accumulation

The labour aggregate $L_{Y,t}$ is composed of three skill-types of labour force:

$$L_{Y,t} = \left(s_L^{\frac{1}{\sigma_L}} \left(h_t^L L_t^L \right)^{\frac{\sigma_L - 1}{\sigma_L}} + s_M^{\frac{1}{\sigma_L}} \left(h_t^M L_t^M \right)^{\frac{\sigma_L - 1}{\sigma_L}} + s_{H,Y}^{\frac{1}{\sigma_L}} \left(h_t^H L_t^{HY} \right)^{\frac{\sigma_L - 1}{\sigma_L}} \right)^{\frac{\sigma_L}{\sigma_L - 1}}. \quad (11)$$

Parameter s_s is the population share of the labour-force in subgroup s (low-, medium- and high-skilled), L^s denotes the employment rate of population s, h_t^s is the corresponding accumulated human capital (efficiency unit), and σ_L is the elasticity of substitution between different labour types[6]. An individual's human capital is produced by participating in education and Λ_t^s represents the amount of time an individual spends accumulating human capital :

[6]Note that high-skilled labour in the final goods sector L_t^{HY} is total high-skilled employment minus the high-skilled labour working in the R&D sector ($L_{A,t}$).

$$h_t^s = h_s e^{\psi \Lambda_t^s}, \quad \psi > 0 \tag{12}$$

The exponential formulation used here adapts Jones (2002) into a disaggregated skill-structure by incorporating human capital in a way that is consistent with the substantial growth accounting literature with adjustments for education[7]. The ψ parameter has been studied in a wealth of microeconomic research. Interpreting Λ_t^s as years of schooling, the parameter corresponds to the return to schooling estimated by Mincer (1974). The labour-market literature suggests that a reasonable value for ψ is 0.07, which we apply here. Investments in human capital can then be modelled by increasing the years of schooling (Λ_t^s) for the respective skill-groups (see annex B).

4.5. The government budget constraint

For the government sector various expenditure and revenue categories are separately modelled. On the expenditure side we assume that government consumption (G_t), government transfers (TR_t) and government investment (I_t^G) are proportional to GDP and unemployment benefits (BEN_t) are indexed to wages. The government provides subsidies (S_t) on physical capital and R&D investments in the form of a tax-credit and depreciation allowances, with are exogenous in the model.
Government revenues (R_t^G) consists of taxes on consumption as well as capital and labour income. Fiscal transfers received from the EU are denoted by COH_t (which is negative for the net contributors). Labour taxes gradually adjust to stabilise the debt to GDP ratio in the long run according to the following rule

$$\Delta t_t^L = \tau^B \left(\frac{B_{t-1}}{Y_{t-1}} - b^T \right) + \tau^{DEF} \Delta \left(\frac{B_t}{Y_t} \right) \tag{13}$$

where b^T is the government debt target, τ^B and τ^{DEF} are coefficients. Therefore, government debt (B_t) evolves according to

$$B_t = (1 + r_t) B_{t-1} + G_t + IG_t + TR_t + BEN_t + S_t - R_t^G - COH_t \,. \tag{14}$$

Donor countries (EU15) finance their contributions to the EU budget (COH<0) through increases in labour taxes.

Cohesion policy programmes are subject to the condition of additionality and co-financing. Additionality requires that Structural Funds are additional to domestically-financed expenditure and are not used as a substitute for it. The co-financing principle means the EU provides only matching funds to individual projects that are part of the operational

[7]See Barro and Sala-i-Martin (1995).

programmes and that the EU funds are matched to a certain extent by domestic expenditure. The problem with defining a proper benchmark means that in practice this principle of additionality is hard to verify and is thus not always binding. Member States are not required to create new budgetary expenditure to co-finance cohesion policy support. Existing national resources that were used to finance similar areas of interventions (and are thus concerned by the additionality requirement) can be 'earmarked' to co-finance Structural Fund transfers. Total spending increases only by the amount of Structural Fund transfers.
More formally, assume a cofinancing rate of c , i.e. the EU transfer COH_t has to be matched by domestically-financed expenditure $c.COH$. The additionality and co-financing principles can be expressed as the following condition for total government spending in a beneficiary country:

$$TOTEXP_t = COH_t + \max(EXP_0, c \cdot COH_t) \quad (15)$$

where $TOTEXP_t$ is total expenditure, COH_t is the fiscal transfer received from the EU cohesion funds, EXP_0 domestically--financed expenditure in the counterfactual situation (without Structural and Cohesion Funds), and c is the co-financing rate. Examining past additionality tables of Member States, it seems that most national public expenditure concerned by additionality exceeded the co-financing needs by far. In this case $EXP_0 > c \cdot COH_t$, and total expenditure is given by

$$TOTEXP_t = COH_t + EXP_0 \quad (16A)$$

As spending on infrastructure and education is already high in the NMS countries, the standard procedure in model-based evaluations has been to take domestically-financed expenditure EXP_0 in the counterfactual situation (without structural and cohesion funds) as the benchmark and only examine the impact of the fiscal transfer COH_t received from the EU cohesion funds. (Varga and in 't Veld, 2009).

However, the recent economic crisis brought many governments into difficulties and forced them into sharp retrenchments. Large increases in bond spreads constrained governments in Hungary, Latvia and many other member states and forced them to respond with significant reductions in non-essential spending. To support these economies, payments from EU funds have been accelerated and brought forward, but the condition of cofinancing was not abandoned. It was considered a crucial condition as a guarantee to avoid "waste" of community funding to sub-optimal projects. Given the large reductions in public spending in many of the EU member states, the additionality principle could be explicitly taken into account and total cohesion expenditure represented by the following equation:

$$TOTEXP_t = COH_t + c \cdot COH_t + EXP_0 \quad (16B)$$

In section 7 we show the effect of this condition on the overall results.

5. Macroeconomic impact of cohesion spending

Cohesion policy interventions are simulated in the model through shocks given to corresponding model variables. In total 86 different interventions are identified and each of these is linked to specific model variables. Table A1 in the annex shows the complete list of interventions and corresponding model variables, Table 5 summarises this for the main five fields of interventions.

Table 5.1 Matching fields of interventions and model variables

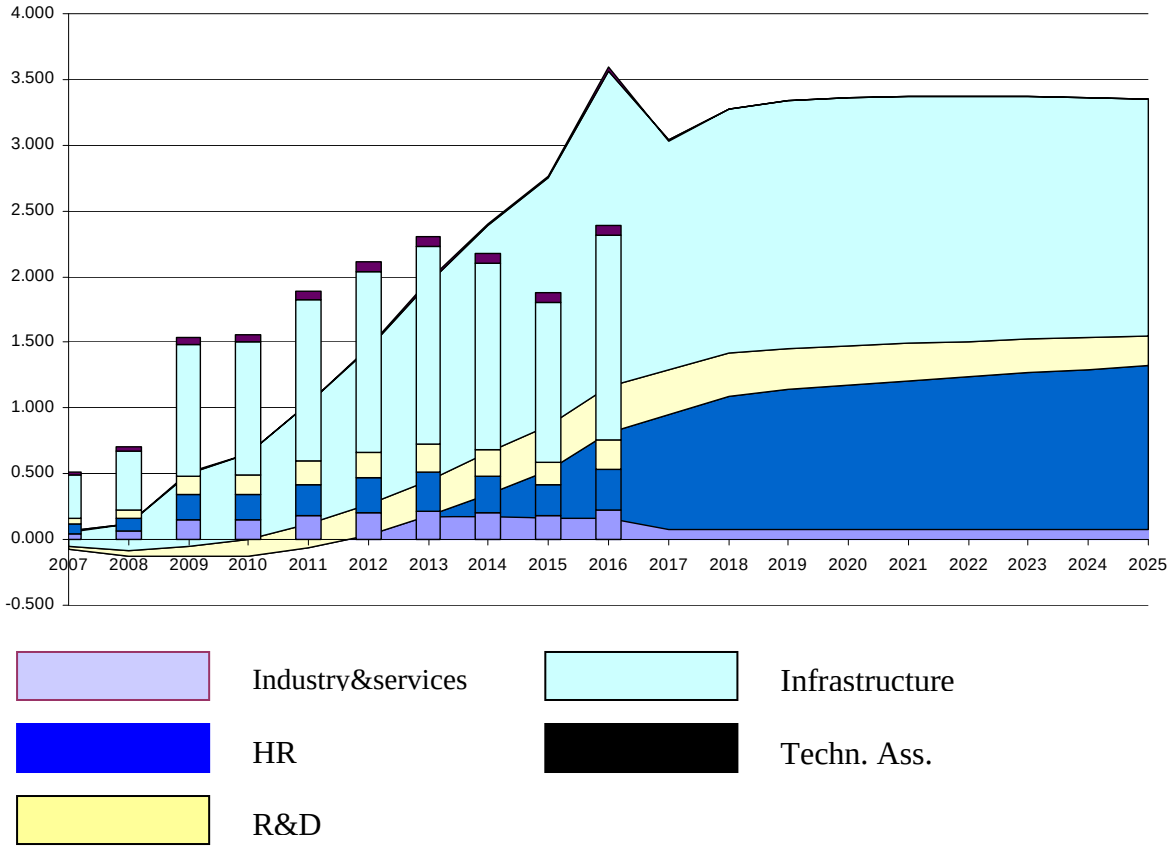
Field	Variable to implement the shock
Infrastructure	Temporary increase in I^G government investment or G_t consumption
Agriculture, Industry&Services	Temporary increase in other government expenditures (G_t) Reducing fixed costs of tangible capital costs faced by final goods firms (FC_Y and rp^K, permanent or temporary reductions)
RTD	Reducing the fixed costs or risk-premia faced by the users of R&D products, (FC_A and rp^A, permanent or temporary reductions)
Human resources	Raising human capital and government transfers expenditures - investment in high-skilled human capital (h_t^H via Λ_t^H) - educational investments in all skills (h_t^s via Λ_t^s)
Technical assistance	Temporary increase in government consumption (G_t)

Figure 5.1 below shows the impact of cohesion expenditure for the New Member States, the aggregate of the countries that joined the European Union in the 2004 enlargement and that receive the lion share of total EU cohesion policy spending. The payment profile assumed is the delayed spending profile with payments spread over 2007 to 2016 (as in Table 2). Detailed figures for each of the recipient countries are presented in the annex (Figures C.1-17), which show results for all spending combined and for subcategories separately.

In Figure 5.1 the impact of cohesion spending on GDP is shown broken down into the different categories of spending. In this figure each band represents the results from a model simulation of only that particular category of spending, i.e. the lowest band shows the GDP impact of spending on agriculture, industry & services, the second band the GDP impact of investment in human capital, the third that of R&D investment, the fourth, and largest, band that of infrastructure spending, and the last (smallest) band technical assistance. These charts illustrate the net contribution of each field of intervention and the time profile over which the output effects for each of these categories materialise. In general, the impact of infrastructure investment (the largest category in size) comes through fastest, but this is to a large extent a reflection of statistical measurement of GDP (this government spending enters the GDP definition). R&D and human capital investment effects take longer to materialise, and could

even be negative in the short run. Note that all these results include spillover effects from other countries, i.e not only include the effects of domestic spending but also of that in other countries, and also take into account the financing of EU Cohesion expenditure through tax increases in donor countries (incl. those EU15 countries that receive Cohesion funds).

Figure 5.1 New Member States: Cohesion spending and GDP effect



Note: Cohesion expenditure (as % of GDP) and simulated GDP impact (% difference from baseline)

The category *support to agriculture, industry and services* includes interventions like support to processing and marketing of agricultural and fisheries products, agricultural waste resources management, co-financing of state aids to industries and services, supporting plant and equipment investment. These interventions are modelled as reductions in fixed costs (lowering startup costs and increasing entry of new firms) or as lower capital costs for tangible capital (increasing investment and capital accumulation). These policies have a growth boosting effect in the short run, i.e. during the years of the programming period when the spending occurs, but there is some longer lasting effect on potential output even after spending has discontinued.

Expenditure on *human resources* includes all spending on educational and vocational training as well as more generally defined labour market policies and spending on social inclusion. Some of these interventions are treated as unproductive government spending but most are modelled as skill enhancing. Total human capital in the model depends on the efforts individuals spend on accumulating human capital and an increase in the years of schooling (participation in training) for a respective skill group raises the skill efficiency of that group (see appendix). In order to account for the additional time spent on training, we assume that

the last cohort of student population stays longer in the education system and enters into the active labour force later, which reduces output in the short run. The effects of training on average skill efficiencies take time to build up, taking into account cohort effects, and the gains are only becoming apparent in the medium term, but they become significant and highly persistent. The efficiency effects depreciate according to the exit rate of working age population in the long run. This may be an underestimation of the true depreciation rate if a large part of vocational training targets unemployed or inactive people in older age groups, with a shorter remaining productive working life. A second reason why the simulated effects should be considered an upper bound of the likely outcomes is that the impact of training on skill efficiencies depend on the subsequent employment status and human capital may depreciate faster after training if they remain unemployed/inactive or become unemployed after a short period of employment. [8]

Support to R&D includes all spending on research, technological development and innovation (RTDI), including the establishment of networks and partnerships between businesses and/or research institutes (see Annex A). In the model this is captured as reductions in fixed costs and reductions in intangible capital costs for the intermediate sector, the users of the output of the R&D sector. By reducing these costs, it becomes easier for new start-ups to enter the market. This is because although both existing firms and newcomers face similar problems when marketing new products, start-ups typically have less access to capital markets and have to overcome administrative hurdles (and costs) to set up a new business. By supporting innovation, high skilled workers are reallocated in the model from the production sector to the R&D sector. Initially, this reallocation can reduce final goods production and have a negative impact on growth, but over time the positive output effects dominate as productivity increases, and this also stimulates physical investment. It is worth noting that while it takes time for these effects to become apparent, the output gains are significant and, importantly, continue to increase long after spending is discontinued (reflecting the endogenous growth nature of the modelling approach).

Infrastructure investment accounts for a large share of spending and includes investment in transport, telecommunications, energy and environmental infrastructure. All this spending is modelled as government investment with the exception of categories like social infrastructure investment and promotion of biodiversity which is treated as unproductive spending. In the short run the effects of government investment (productive) and government consumption (unproductive) are similar. Both lead to higher aggregate demand but are partly crowded out by lowering private consumption and private investment and some of the demand impulse leaks abroad through higher imports. However, in the medium term government investment raises productivity (this in contrast to unproductive government consumption) and the output enhancing effects of infrastructure investment become stronger in the following years. When investment is discontinued, the productivity effect slowly declines due to depreciation of public capital.

Finally, the category *Technical assistance* includes monitoring and evaluation costs and is modelled as unproductive government spending. In the model this type of spending has no positive output effects. It should be borne in mind that monitoring and evaluations serve an important purpose in avoiding that too much of the available funding goes to waste and that

[8] Note that the participation rate is exogenous in the model. Some of the labour market programmes and interventions could raise labour force participation and so increase the employment rate. To capture this effect, one would also have to endogenously model the participation decision.

resources are as much as possible directed to the most "productive" projects. These benefits are however not directly quantifiable.

Country results

A comparison across countries shows GDP effects roughly proportional to the funds received, when the financing of EU contributions is also taken into account. Hence, the largest recipients show the largest increases in GDP. In Figures C.1-C.18 (in annex) the bars represent (net) cohesion spending received (as % of GDP) and the solid lines the simulated GDP impact (as % difference from baseline). We only consider here the spending in the NMS plus the five old member states that receive the largest share of total cohesion spending (detailed tables are presented in annex C). Note that these simulations only include cohesion spending for Germany's Eastern Lander and Italy's Mezzogiorno. As the assumed contributions to the financing of cohesion spending exceed their receipts, both Germany and Italy have negative net cohesion receipts.

In general terms the results for the main economic variables can be summarised as follows. In the receiving countries, consumption spending increases, in particular for Ricardian consumers who anticipate higher permanent income and who with access to financial markets can already raise their consumption early on. Liquidity-constrained consumption is driven by employment and wage developments and is also generally higher. Wages grow in the long run in line with productivity and as productivity gains become stronger over time, incomes rise. In donor countries, higher contributions to the EU budget lead to an increase in government indebtedness and this in turn leads to a gradual increase in labour taxes, which has a negative impact on employment growth. However, higher growth in net-recipient countries boosts tax revenues. For the net recipient EU15 countries this effect generally outweighs the former and the fall in government debt creates room to lower labour taxes, giving rise to positive employment effects. Corporate investment is generally crowded out by the increase in cohesion spending in the short run. In the medium run productivity enhancing effects come to dominate and investment spending increases. There is generally upward pressure on inflation as the demand effects dominate in the short run, but in the medium term, as potential output increases, inflationary pressures subside. Imports are boosted by the increase in demand while the increase in spending leads to a sizeable real appreciation in the largest recipient countries and the loss in competitiveness reduces exports growth. As a result of this, trade balances deteriorate and current account deficits become larger.

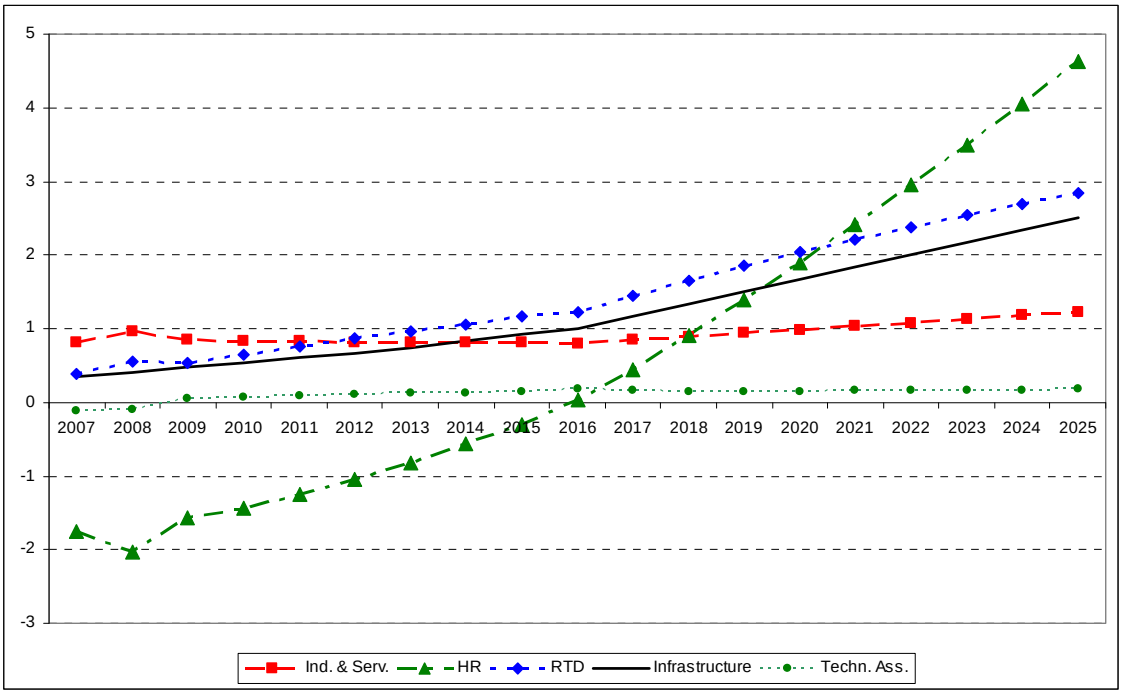
For a cross-county comparison of the relative effectiveness of Cohesion spending, Table 5.2 shows the cumulative (net) cohesion receipts, GDP effects and cumulative multipliers per country at the end of the programming period 2016 and in 2025. The cumulative multiplier is calculated as the cumulative sum of GDP effects divided over the cumulative sum of net cohesion receipts. This multiplier is close to one in the last year of the programming period and increases further in the following years even though spending is discontinued. The multiplier is largest in Spain and Portugal, old member states that still receive large amounts of Cohesion spending, and becomes in the medium term also larger for countries like Slovakia and Poland. Germany and Italy are net contributors in these simulations and cumulative GDP effects are negative (DE) or negligible (IT). The relative ranking depends on a number of factors that change importance over time. Countries with a floating exchange rate have relatively smaller multipliers in the short run, as the fiscal transfers lead typically to an appreciation of the exchange rate and a loss in price competitiveness. As the additional

spending raises inflation, competitiveness also deteriorates in fixed exchanger rate countries in the medium run. The shares of different spending categories also play an important role. As Figure 5.2 shows, cumulative multipliers differ substantially across categories of spending. Direct support to industry and services has a large multiplier on impact, as it is assumed to reduce fixed costs and capital costs and leads to an increase in new start-ups. The impact multiplier of the category infrastructure investment is around 0.5. Some of this category is modelled as unproductive spending (investment in biodiversity, social infrastructure, etc.), but the remaining as productive government investment. Part of this impulse leaks abroad through higher imports and part is crowding out private spending to the extent that it leads to higher wages and real interest rates. But in the medium term the multiplier becomes larger and exceeds one. The cumulative GDP multiplier for R&D investment is on average slightly larger than that for infrastructure investment, and has a similar profile over time, with increasing returns in the medium and long term. Investment in human capital has initially a negative multiplier as it reduces output in the short run (reduction in active labour force). But the multiplier becomes positive in the medium run and increases sharply in the long run. This type of intervention has long delayed benefits, but the largest long run output effects of all spending categories.

Table 5.2 Cumulative GDP effects and cumulative multipliers

	Σ Net Cohesion 2016	Σ GDP 2016	Σ GDP 2025	Cumulative multiplier 2016	Cumulative multiplier 2025
BG	17.42	13.12	40.30	0.75	2.31
CY	3.05	2.49	6.97	0.82	2.29
CZ	16.84	8.95	32.19	0.53	1.91
EE	22.49	17.23	45.30	0.77	2.01
HU	23.36	19.28	57.14	0.83	2.45
LT	25.08	18.19	55.23	0.73	2.20
LV	24.88	21.33	65.20	0.86	2.62
MT	13.35	7.86	20.11	0.59	1.51
PL	16.85	17.29	54.10	1.03	3.21
RO	13.25	13.00	34.30	0.98	2.59
SI	10.10	7.82	21.78	0.77	2.16
SK	14.44	15.79	47.61	1.09	3.30
ES	1.29	1.50	4.75	1.16	3.67
GR	5.86	5.49	15.35	0.94	2.62
PT	10.19	11.42	32.19	1.12	3.16
DE	-1.24	-0.28	-0.06	-	-
IT	-0.91	0.09	1.27	-	-
NMS	17.06	14.68	44.90	0.86	2.63
EU15	-0.95	-0.62	-0.78	-	-

Figure 5.2 New Member States: Cumulative multipliers Cohesion spending categories



Note: cumulative multiplier is calculated as the cumulative sum of GDP effects divided over the cumulative sum of net cohesion receipts.

6. Sensitivity analysis

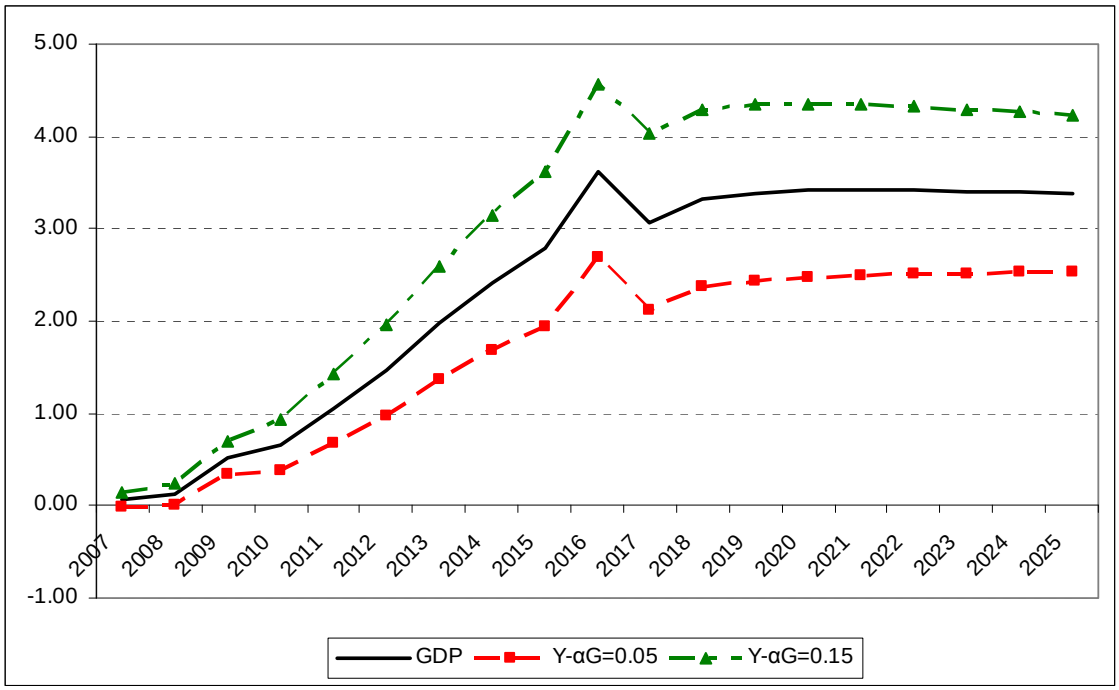
Model results depend on model parameterisation, and although these correspond to what is commonly assumed in the economic literature, there exists a wide range of uncertainty surrounding some of these estimates. One parameter that plays a more crucial role is the output elasticity of public capital (infrastructure) α_G. The exists much uncertainty about the appropriate value for this parameter. There is a large literature on infrastructure investment and economic growth, but econometric problems relating to common trends, missing variables, simultaneity bias and reverse causation hamper a proper identification of this elasticity from macro-economic timeseries[9]. Studies using pooled time series, cross-section data across states, have generally yielded lower estimates with an implied rate of return on public investment equal to the rate of return on private capital or lower (e.g. Bougheas et al., 2000). De la Fuente (2010) reports estimates for Spanish regions between 0.076 and 0.086. Estimated effects of other infrastructure investment like telecommunications are often smaller.

In the model the output elasticity of public capital α_G is set to 0.10, but as a sensitivity analysis in Figure 6.1 we show the impact of a lower (α_G=0.05) and higher (α_G=0.15) elasticity. Although the category "infrastructure" spending amounts for a large share of overall spending, not all interventions in this category are simulated in the model as government investment. Spending on social infrastructure projects and promotion of biodiversity are modelled as unproductive spending, and not affected by this alternative

[9] For an overview see the surveys by Gramlich (1994), Sturm (1998) and Romp and de Haan (2005)

assumption on public infrastructure investment in the model. As can be seen from Figure 6.1, results are sensitive to this assumed output elasticity. With an output elasticity of 0.05, the improvement in GDP by 2016 for the New Member States aggregate is only 2.7 percent compared to 3.63 percent in the benchmark case[10]. Evidence suggests the availability of large scale transfers could generate more rent-seeking behaviour and thus yield a lower return on investments. In that case a lower output elasticity of public investment may be a more realistic assumption. [11]

Figure 6.1 : NMS: GDP effects for alternative output elasticities of public investment



Note: bottom line α_G =0.05, upper line α_G =0.15

7. Cofinancing cohesion spending and faster absorption of funds

7.1 Co-financing and additionality

Cohesion Policy is subject to the condition of additionality and co-financing, requiring that member states use the funds received only in addition to their own spending. On average, EU funding is available for around 75 percent of the costs of a project in Objective 1 regions, and

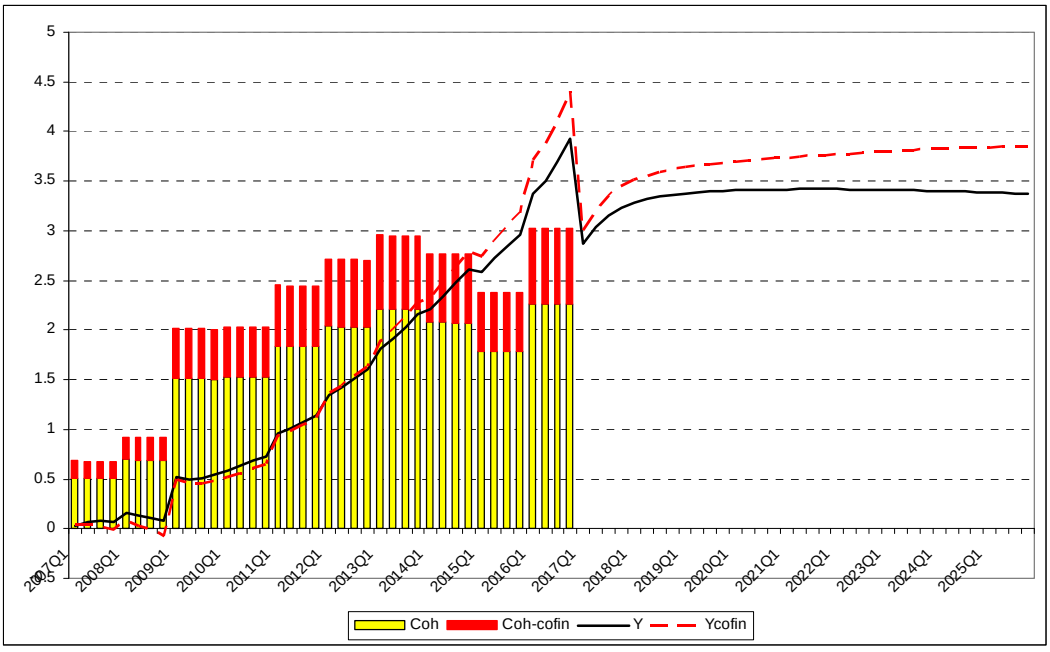
[10] In case of a higher elasticity of 0.15 the GDP gain by 2016 is 4.56

[11] In Varga and in 't Veld (2009b) we also considered the sensitivity of results with respect to the share of liquidity-constrained consumers and found this not to have a major impact. This share is typically estimated to lie in the range between 0.2 and 0.4 (e.g. Ratto et al., 2009), and here it has been set to 0.4, the top of the range typically estimated in empirical studies. Results are not substantially different for higher values (0.6) or lower values (0.2). The reason is that cohesion spending is financed by a pure fiscal transfer from donor counties to recipient countries and does not give rise to proportionally higher tax liabilities in the future. In addition one should bear in mind that consumption by Ricardian households is also positively affected in these simulations as most spending is productive and leads to a rise in permanent incomes.

the remainder has to be funded by the countries' own resources. The results described above only considered the effects of EU funding, and implicitly assumed the other 25 percent was part of "normal" spending included in the baseline.

But the financial crisis has forced many governments into sharp retrenchments and public expenditure has been slashed. The conditions of additionality and co-financing seemed in these circumstances unnecessary restrictive, as many governments faced an increase in their borrowing costs and the additional spending would raise debt servicing costs further. However, the reason why these conditions are enforced is that they are seen as a guarantee that the EU funds are not misspent on sub-optimal projects. It is feared that suspending the co-financing rule might reduce incentives for Member States to come up with proposals for viable projects and lead to wasteful spending on unproductive projects.

Figure 7.1 NMS: Effect of co-financing condition of cohesion expenditure



Note: GDP effects in NMS without cofinancing (solid line) and with 25% co-financing (dashed line).

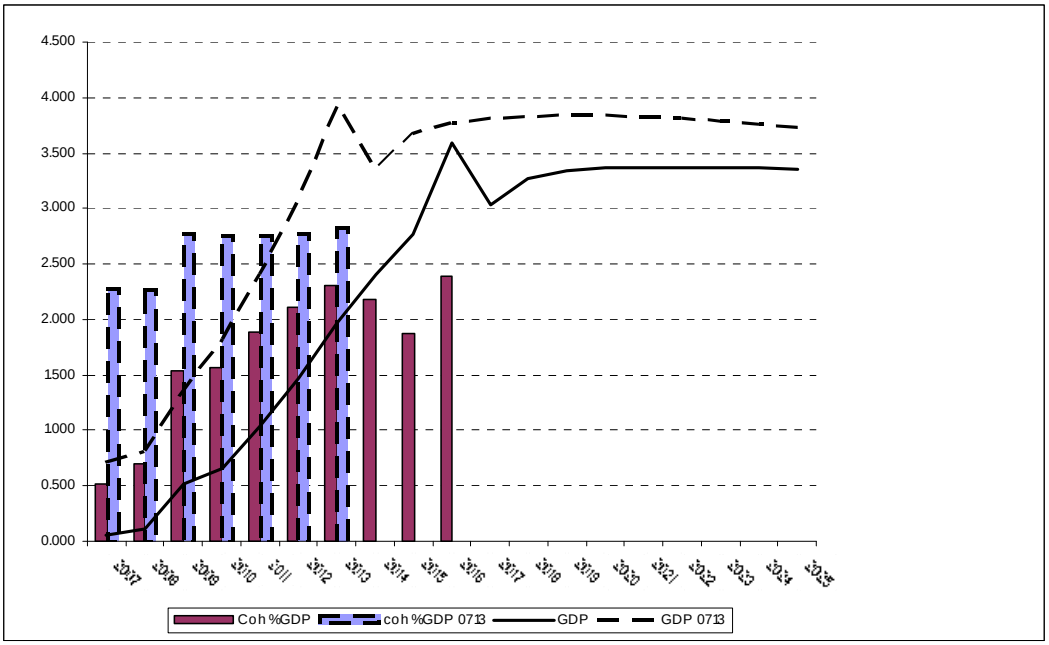
Figure 7.1 shows the effects when additionality and co-financing is taken into account. In this scenario an additional 25 percent of all projects' costs are financed from each country's own resources. There are two effects this co-financing condition has on the overall results. The first effect, which dominates in the short run, is that the co-financing and additionality condition leads to more crowding out of private spending. As this part of spending is not received as a transfer from abroad, but is domestic public expenditure, economic agents now have to anticipate higher future tax liabilities. This reduces the multiplier. The increase in government spending also leads to an increase in government debt and higher government interest payments. With an endogenous sovereign risk premium, which depends on government debt levels, interest payments rise and this reduces the additional GDP impact from higher spending. As a result, GDP is slightly lower in the short run. However, the second effect, which dominates in the medium/long run, stems from the fact that total spending is one-third higher in this scenario. As most of the cohesion programmes are productive investments, the supply-side effects are considerably larger under co-financing

condition. Higher output also raises tax revenues and improves government finances in the medium run, making the burden of higher spending easier to bear. The long run output effect is more than 10 percent larger under co-financing. Note though that this is less than the differences in total spending, which is one-third higher in this scenario, i.e. the overall multiplier is lower. It should be borne in mind that the co-financing and additionality condition also serves as an insurance that EU funds are not misspent on unproductive projects.

7.2 Delays in spending vs. faster absorption

As discussed in section 3, governments have been very slow to propose projects for funding and the "absorption" rate of cohesion funding has been extremely low. Very little of the available funding has been spent in the first three years of this programme period and the projections on which the above simulations were based assumed spending to be spread over many more years and lasting until 2016 (as shown in Table 2).
To illustrate the impact of the delays in spending on potential output, Figure 7.2 shows the GDP impact if all spending is assumed to take place within the programme period 2007-13 and follows the profile as implied by the "decided amounts" (as shown in Table 1). According to this model simulation, the cost of delaying productive expenditure on public infrastructure, human capital investment and R&D is significant. If such implementation delays could be avoided and a faster "absorption" of the funds could be achieved, this would not only raise GDP in the short run but also raise potential output by more in the medium term. The long delays in payments are partly due to the strict conditions which these projects are subject to, designed to avoid funding being lost on unproductive projects. Wasteful spending should obviously be avoided, but this simulation indicates there are also significant costs in delaying available funding for productive investments.

Figure 7.2: NMS: GDP impact faster payments profile



Note: Bars represent cohesion payments as % of GDP (decided amounts (see Table 1) vs. projected payment profile (see Table 2)), solid line represents GDP (projected payment profile), dashed line represents GDP decided amounts-profile (% difference from baseline).

8. Conclusions

This paper has shown how EU Cohesion Policy over the programming period 2007-13 can be simulated with a dynamic general equilibrium model with endogenous growth and human capital accumulation. There are potentially significant long run benefits from EU Cohesion Policy spending in the less developed regions of the EU. These positive benefits become stronger in the medium and long run and will be able to deliver a significant improvement in incomes and output in the regions supported.

In the short run, these interventions boost spending and raise output. However, they also raise inflationary pressures and could lead to real appreciations and crowd out productive private investment. R&D promoting policies could drive up wages of researchers and crowd out high skilled employment in other sectors, while training and other human capital investments could lower output in the short run if it leads to a reduction in the active labour force. Significant effects from these policies should only be expected some years after implementation. But in the medium term the productivity enhancing effects of infrastructure investment, R&D promoting policies, and human capital investments become gradually stronger and generate large output effects in the long run. Even when the funding is terminated and spending discontinued there are permanent positive output gains.

The conditions of co-financing and additionality are shown to have no detrimental effect on GDP. The gains from more productive spending soon outweigh the costs of financing a share of the programme from their own budget, and long run GDP effects are larger. The rationale for these conditions is to act as an insurance that EU funds are not misspent on unproductive projects. The costs of the long delays in implementation are found to be significant. Speeding up the allocation of available funding for productive investments could considerably raise potential output effects.

While this study is based on a detailed breakdown of cohesion spending into 86 different categories, there is a need for more detailed analysis. Results depend crucially on the classification of projects and the way these projects are captured in the model. At best, they represent an upper bound of the likely effects, as they assume no money is wasted on sub-optimal projects. More detailed information on the different types of interventions would help mapping these projects into the model and assess their scope for productivity-enhancing effects. Linking project-based assessments to model-based assessments is an area for future research.

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Annex A: Fields of interventions

Category Cd	Category	TYPE	MODEL VAR
01	R&TD activities in research centres	RTD	RPREMA
02	R&TD infrastructure and centres of competence in a specific technology	RTD	FCA
03	Technology transfer and improvement of cooperation networks ...	RTD	FCA
04	Assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres)	RTD	FCA
05	Advanced support services for firms and groups of firms	AIS	FCY
06	Assistance to SMEs for the promotion of environmentally-friendly products and production processes (...)	AIS	FCY
07	Investment in firms directly linked to research and innovation (...)	RTD	RPREMA
08	Other investment in firms	AIS	FCY
09	Other measures to stimulate research and innovation and entrepreneurship in SMEs	RTD	RPREMA
10	Telephone infrastructures (including broadband networks)	INFR	IG
11	Information and communication technologies (...)	INFR	IG
12	Information and communication technologies (TEN-ICT)	INFR	IG
13	Services and applications for citizens (e-health, e-government, e-learning, e-inclusion, etc.)	AIS	FCY
14	Services and applications for SMEs (e-commerce, education and training, networking, etc.)	AIS	FCY
15	Other measures for improving access to and efficient use of ICT by SMEs	AIS	FCY
16	Railways	INFR	IG
17	Railways (TEN-T)	INFR	IG
18	Mobile rail assets	INFR	IG
19	Mobile rail assets (TEN-T)	INFR	IG
20	Motorways	INFR	IG
21	Motorways (TEN-T)	INFR	IG
22	National roads	INFR	IG
23	Regional/local roads	INFR	IG
24	Cycle tracks	INFR	IG
25	Urban transport	INFR	IG
26	Multimodal transport	INFR	IG
27	Multimodal transport (TEN-T)	INFR	IG
28	Intelligent transport systems	INFR	IG
29	Airports	INFR	IG
30	Ports	INFR	IG
31	Inland waterways (regional and local)	INFR	IG
32	Inland waterways (TEN-T)	INFR	IG
33	Electricity	INFR	IG
34	Electricity (TEN-E)	INFR	IG

35	Natural gas	INFR	IG
36	Natural gas (TEN-E)	INFR	IG
37	Petroleum products	INFR	IG
39	Renewable energy: wind	INFR	IG
40	Renewable energy: solar	INFR	IG
41	Renewable energy: biomass	INFR	IG
42	Renewable energy: hydroelectric, geothermal and other	INFR	IG
43	Energy efficiency, co-generation, energy management	INFR	IG
44	Management of household and industrial waste	INFR	IG
45	Management and distribution of water (drink water)	INFR	IG
46	Water treatment (waste water)	INFR	IG
47	Air quality	INFR	IG
48	Integrated prevention and pollution control	INFR	IG
49	Mitigation and adaption to climate change	INFR	IG
50	Rehabilitation of industrial sites and contaminated land	INFR	IG
51	Promotion of biodiversity and nature protection (including Natura 2000)	INFR	G
52	Promotion of clean urban transport	INFR	G
53	Risk prevention (...)	INFR	G
54	Other measures to preserve the environment and prevent risks	INFR	G
55	Promotion of natural assets	AIS	G
56	Protection and development of natural heritage	AIS	G
57	Other assistance to improve tourist services	AIS	G
58	Protection and preservation of the cultural heritage	AIS	G
59	Development of cultural infrastructure	AIS	G
60	Other assistance to improve cultural services	AIS	G
61	Integrated projects for urban and rural regeneration	INFR	IG
62	Development of life-long learning systems and strategies in firms; training and services for employees ...	HC	TRAIN
63	Design and dissemination of innovative and more productive ways of organising work	HC	TRAIN
64	Development of special services for employment, training and support in connection with restructuring of sectors ...	HC	TRAIN
65	Modernisation and strengthening labour market institutions	HC	TRAIN
66	Implementing active and preventive measures on the labour market	HC	TRAIN
67	Measures encouraging active ageing and prolonging working lives	HC	TRAIN
68	Support for self-employment and business start-up	HC	TRAIN
69	Measures to improve access to employment and increase sustainable participation and progress of women ...	HC	TRAIN
70	Specific action to increase migrants' participation in employment ...	HC	TRAIN
71	Pathways to integration and re-entry into employment for disadvantaged people ...	HC	TRAIN
72	Design, introduction and implementing of reforms in education and training systems ...	HC	TRAIN
73	Measures to increase participation in education and training throughut the life-cycle ...	HC	TRAIN

74	Developing human potential in the field of research and innovation, in particular through post-graduate studies ...	HC	TRAINH
75	Education infrastructure	INFR	IG
76	Health infrastructure	INFR	IG
77	Childcare infrastructure	INFR	IG
78	Housing infrastructure	INFR	IG
79	Other social infrastructure	INFR	G
80	Promoting the partnerships, pacts and initiatives through the networking of relevant stakeholders	HC	TRAIN
81	Mechanisms for improving good policy and programme design, monitoring and evaluation ...	HC	TRAIN
82	Compensation of any additional costs due to accessibility deficit and territorial fragmentation	TA	G
83	Specific action addressed to compensate additional costs due to size market factors	TA	G
84	Support to compensate additional costs due to climate conditions and relief difficulties	TA	G
85	Preparation, implementation, monitoring and inspection	TA	G
86	Evaluation and studies; information and communication	TA	G
Grand Total			

Annex B: Human capital accumulation

Labour force is disaggregated into three skill-groups: low-, medium- and high-skilled labour. The CES-aggregate for labour has the following form:

$$L_{Y,t} = \left(s_L^{\frac{1}{\sigma_L}} \left(h_t^L L_t^L \right)^{\frac{\sigma_L - 1}{\sigma_L}} + s_M^{\frac{1}{\sigma_L}} \left(h_t^M L_t^M \right)^{\frac{\sigma_L - 1}{\sigma_L}} + s_{H,Y}^{\frac{1}{\sigma_L}} \left(h_t^H L_t^{HY} \right)^{\frac{\sigma_L - 1}{\sigma_L}} \right)^{\frac{\sigma_L}{\sigma_L - 1}},$$

where the subscripts denote the skill-groups (low- L , medium- M and high- H), s_s is the population share of labour-force in subgroup s, L_s denotes the employment rate of population s, h_t^s is the skill-specific efficiency unit of labour, and σ_L is the elasticity of substitution between different labour types. Note that high-skilled labour in the final goods sector is the total high-skill employment minus the high-skilled labour working for the R&D sector ($L_{A,t}$). The calibration is mostly based on EUROSTAT and OECD data. Data on skill-specific population shares, participation rates and wage-premiums are obtained from the Labour Force Survey and Science and Technology databases of EUROSTAT. The elasticity of substitution between different labour types (σ_L) is one of the major issue addressed in the labour-economics literature. We use the Katz and Murphy (1992) estimate of 1.4. We normalize the efficiency of low-skilled at 1 the other efficiency units are restricted by the labour demand equations which imply the following relationship between wages, labour-types and efficiency units:

$$h_t^M = \left(\frac{w_M}{w_L} \right)^{\frac{\sigma_L}{\sigma_L - 1}} \left(\frac{s_M L_M}{s_L L_L} \right)^{\frac{1}{\sigma_L - 1}} h_t^L, \quad and \quad h_t^H = \left(\frac{w_H}{w_M} \right)^{\frac{\sigma_L}{\sigma_L - 1}} \left(\frac{s_H L_H}{s_M L_M} \right)^{\frac{1}{\sigma_L - 1}} h_t^M.$$

In the next step we adapt Jones (2002) into a disaggregated skill-structure and impose that the functional form of $h_t^s = h_s e^{\psi \Lambda_t^s}$ describes the evolution of skill-specific human capital. In line with Jones (2002), we fix the return to schooling parameter of ψ at 0.07 . The number of school years, Λ_t^s for the respective skill-groups are obtained from OECD (2006). For simulation purposes, the participation in trainings can be interpreted as an addition to the years of schooling with a depreciation according to the exit rate of working age population, i.e.:

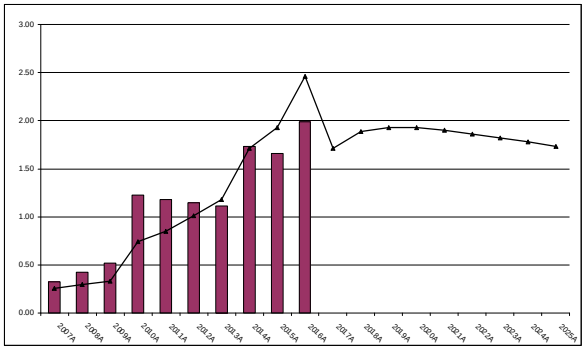
$$\Lambda_t^s = \Lambda^s + l_t^{s,TR}, \quad where \quad l_t^{s,TR} = (1 - \chi_s) l_{t-1}^{s,TR} + \varepsilon_t^{s,TR},$$

where for each skill-group s, Λ^s is the average number of years of schooling in the regular education system, $l_t^{s,TR}$ is the year equivalent of the average time spent in training in period t, χ_s is the exit-rate of the working age population, and $\varepsilon_t^{s,TR}$ is the average year-equivalent of training in period t. Finally, in the baseline we set the variables of training $l_t^{s,TR}$ and $\varepsilon_t^{s,TR}$ to zero and given the years of schooling from OECD (2006) we can compute h_s from the definition of efficiency. In order to simulate the educational investments in human capital we increase the years of schooling (Λ_t^s) for the respective skill-groups by the additional years of schooling that can be financed from the fiscal transfers (shock to $\varepsilon_t^{s,TR}$).

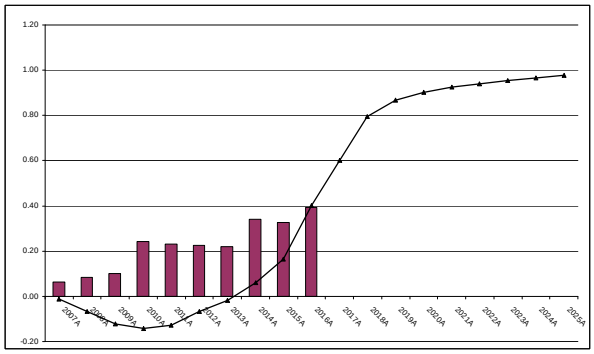
Annex C: Detailed country figures and tables

Figure C.1: Bulgaria: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

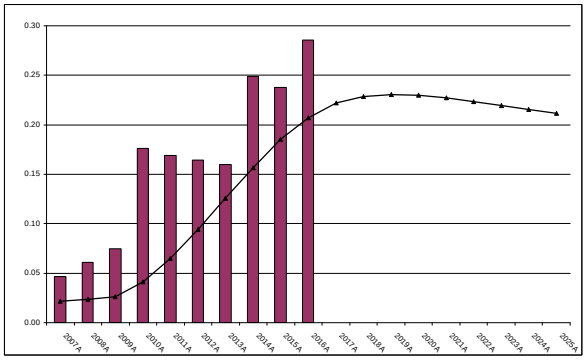
Infrastructure:



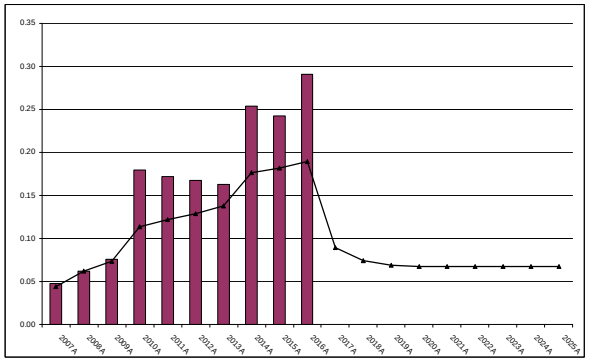
Human capital investment:



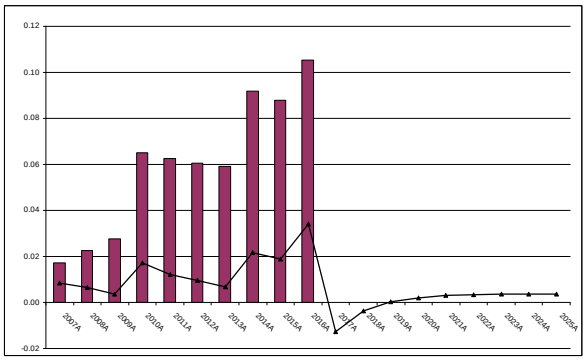
R&D investment:



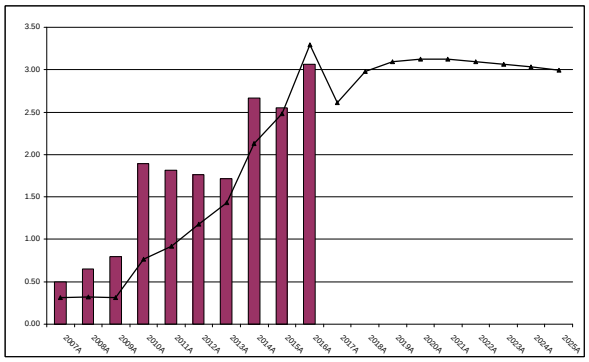
Assistance industry & services:



Technical assistance:



Total:

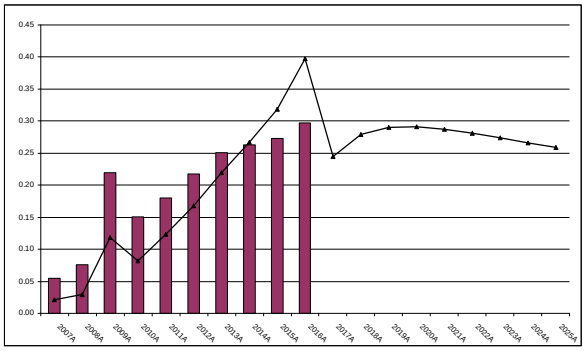


Net cohesion receipts (%) of GDP

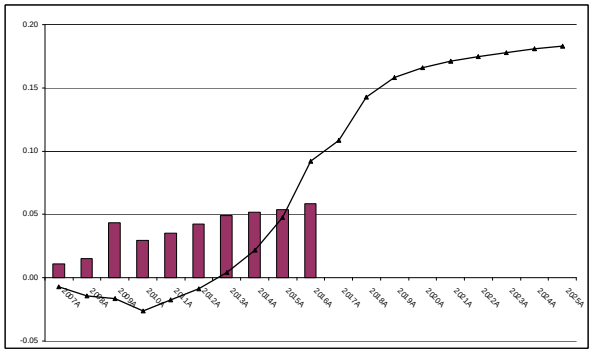
GDP impact

Figure C.2: Cyprus: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

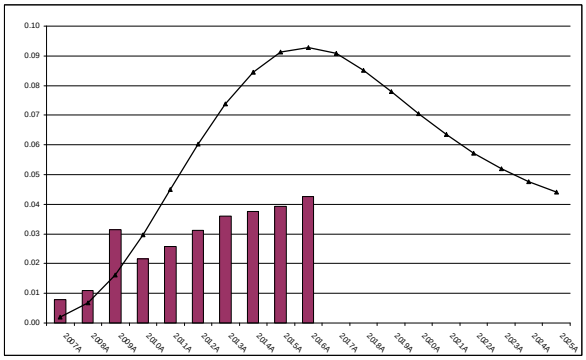
Infrastructure:



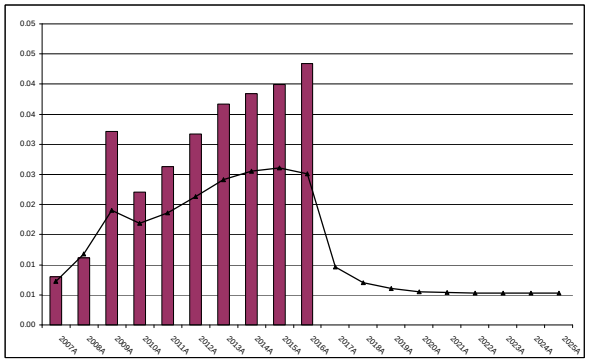
Human capital investment:



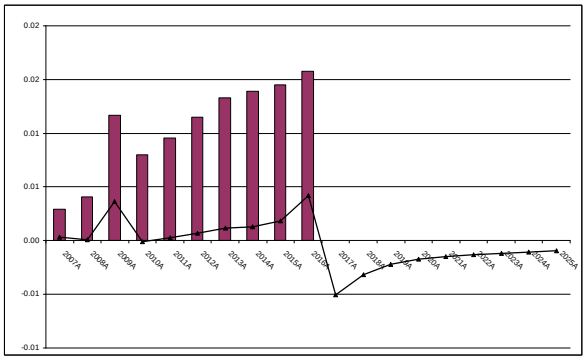
R&D investment:



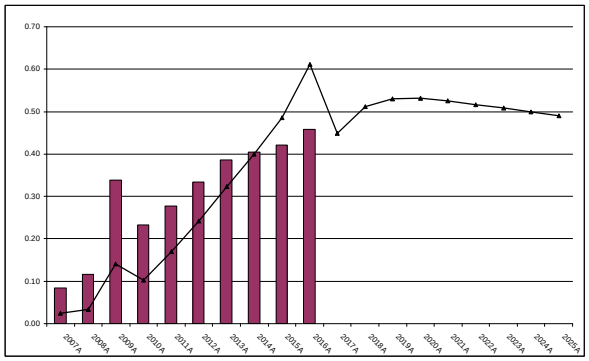
Assistance industry & services:



Technical assistance:



Total:

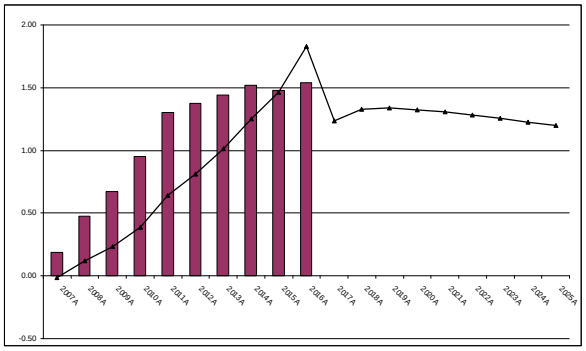


Net cohesion receipts (%) of GDP

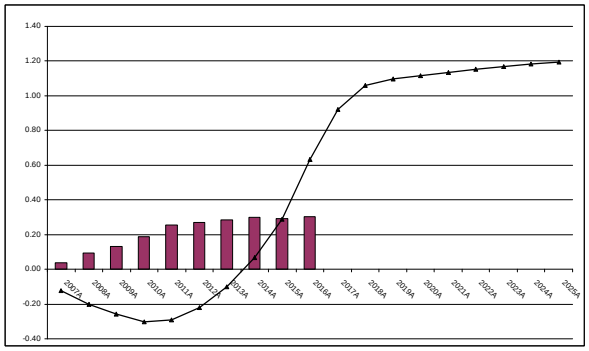
GDP impact

Figure C.3: Czech Republic: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

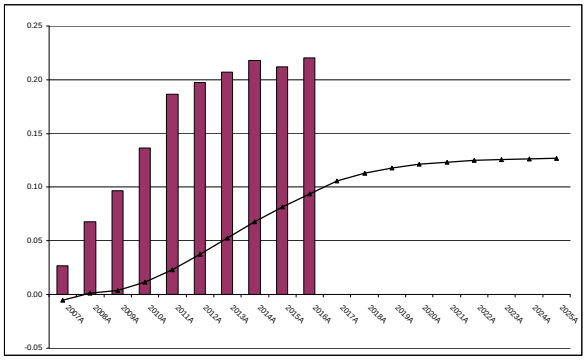
Infrastructure:



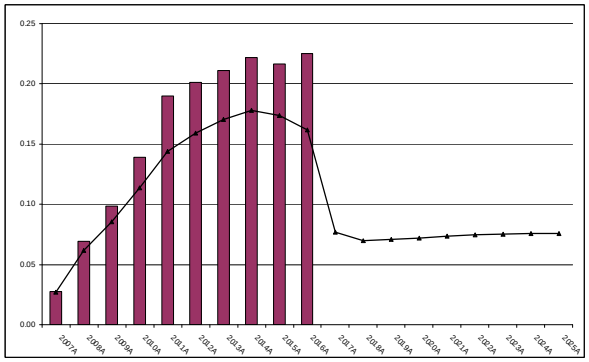
Human capital investment:



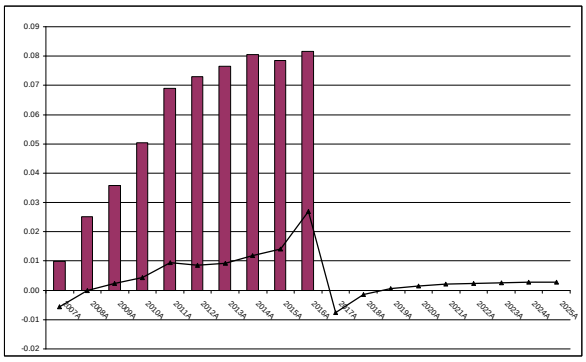
R&D investment:



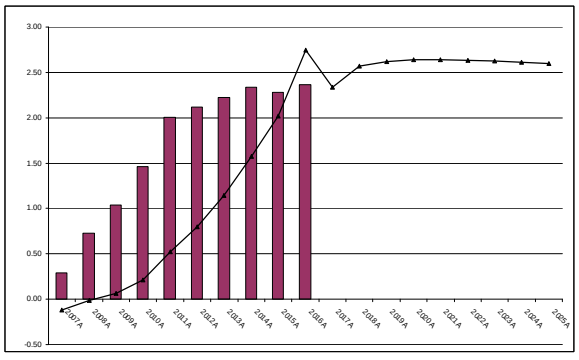
Assistance industry & services:



Technical assistance:



Total:

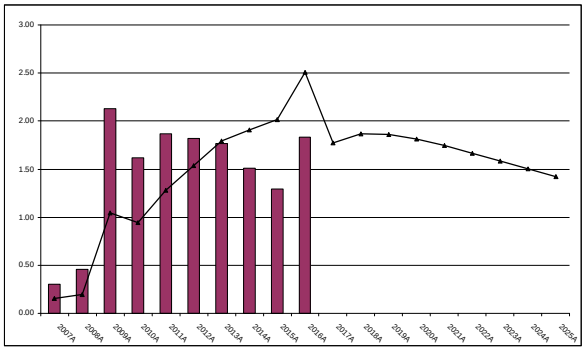


Net cohesion receipts (%) of GDP

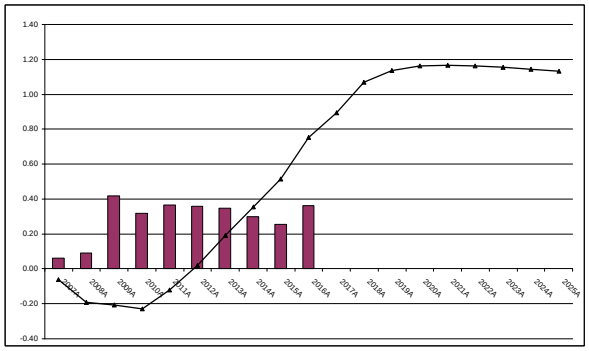
GDP impact

Figure C.4: Estonia: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

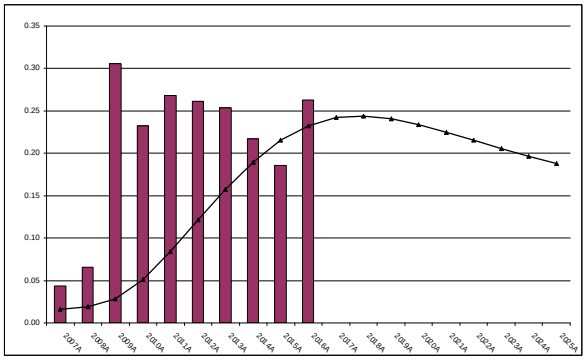
Infrastructure:



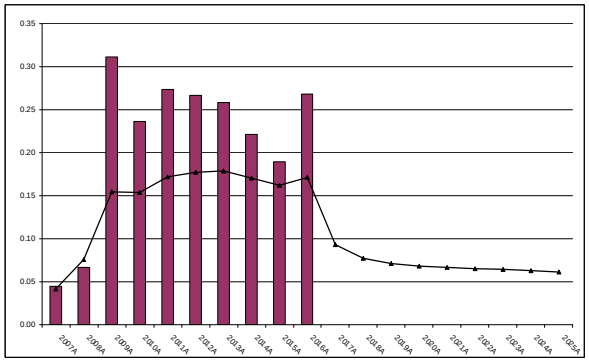
Human capital investment:



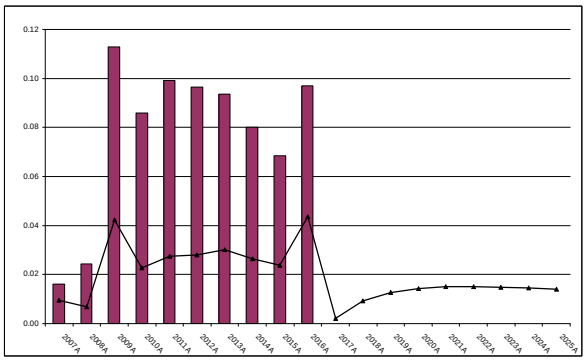
R&D investment:



Assistance industry & services:



Technical assistance:



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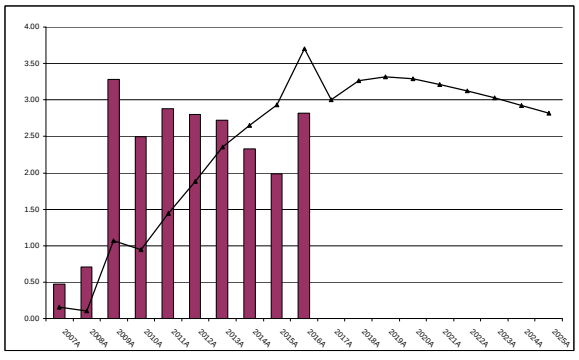
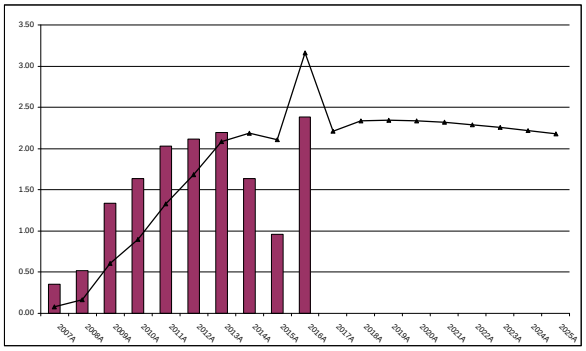


Net cohesion receipts (%) of GDP

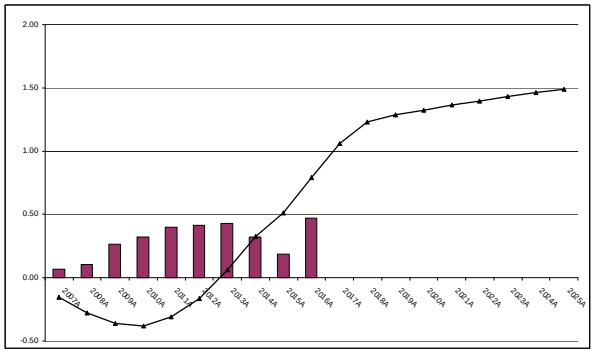
GDP impact

Figure C.5: Hungary: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

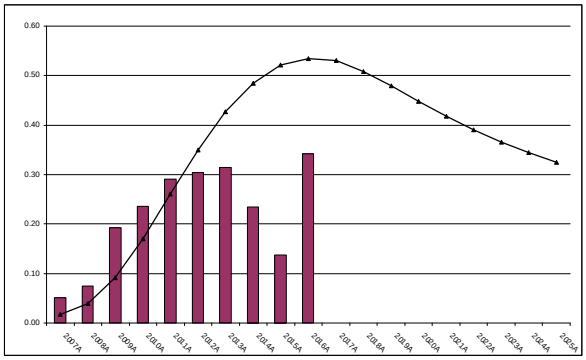
Infrastructure:



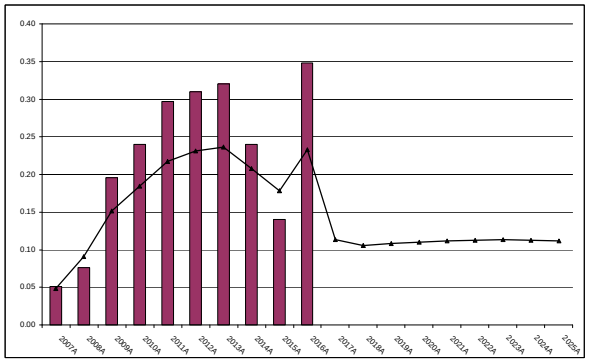
Human capital investment:



R&D investment:



Assistance industry & services:



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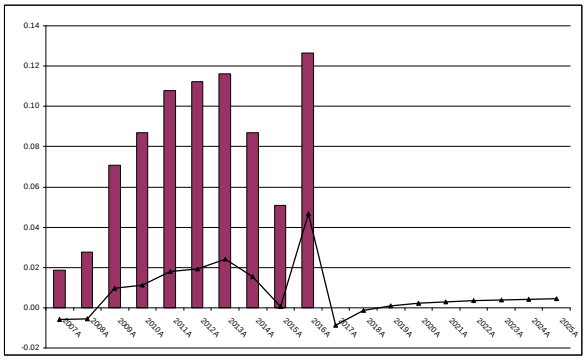

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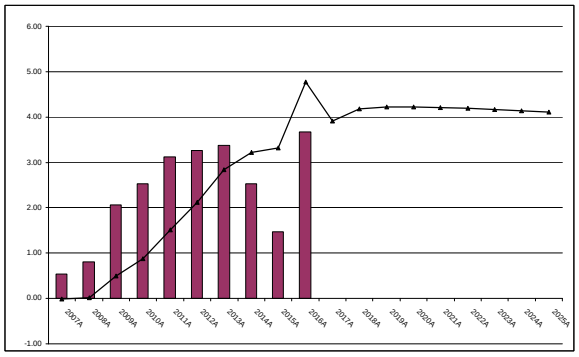
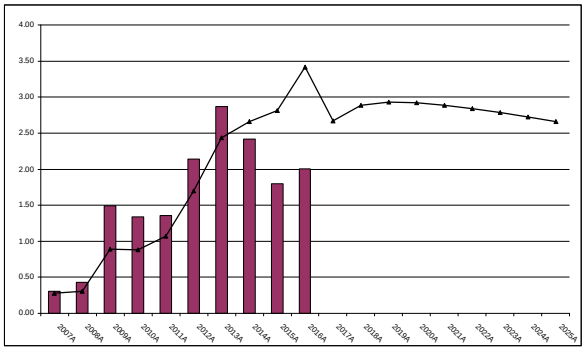


Net cohesion receipts (%) of GDP

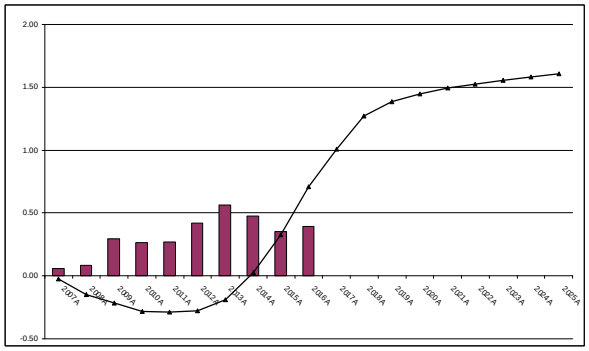
GDP impact

Figure C.6: Latvia: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

Infrastructure:



Human capital investment:



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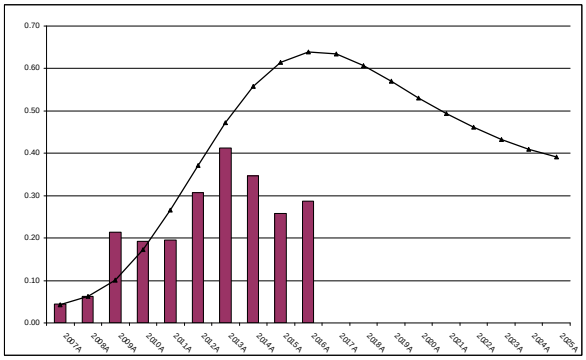
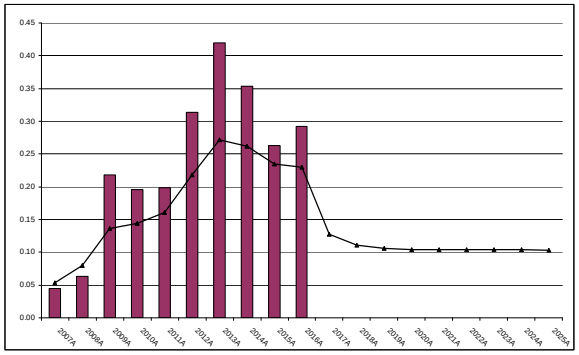


Assistance industry & services:



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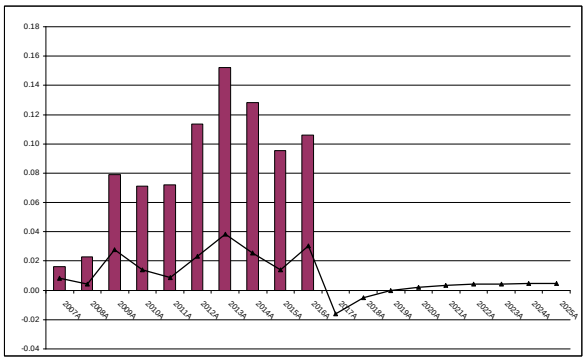

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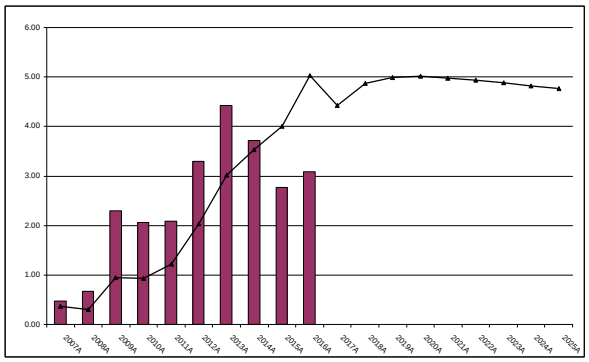
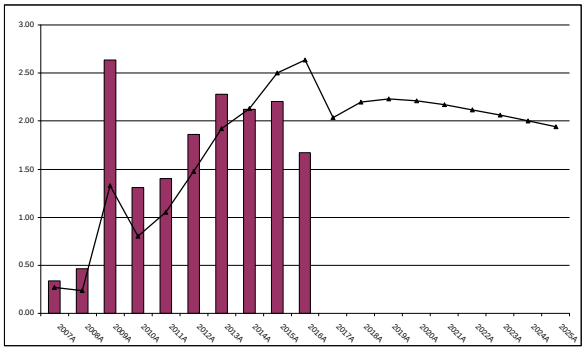


Net cohesion receipts (%) of GDP

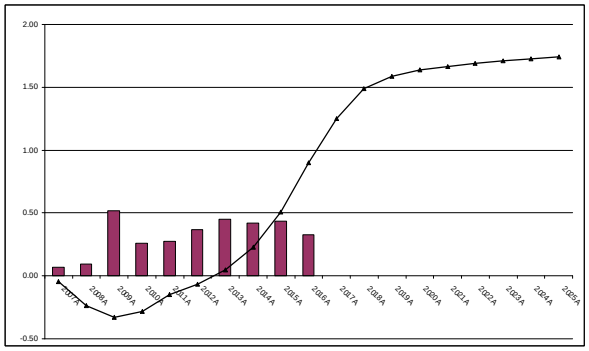
GDP impact

Figure C.7: Lithuania: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

Infrastructure:



Human capital investment:



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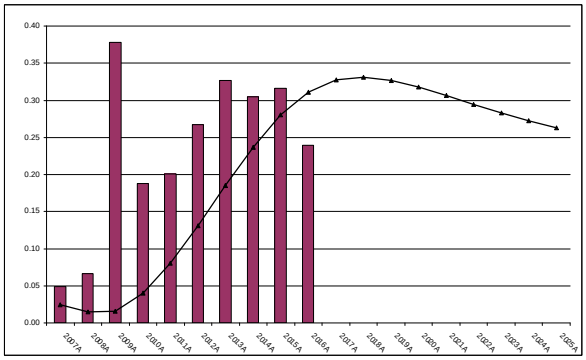
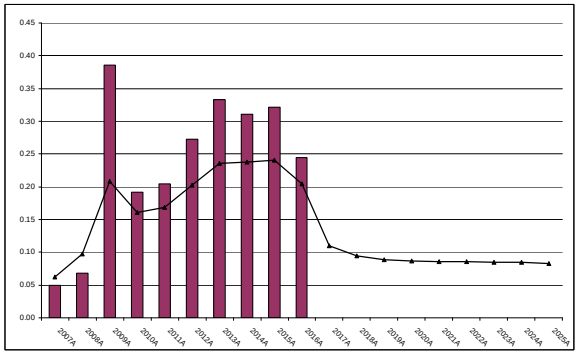


Assistance industry & services:



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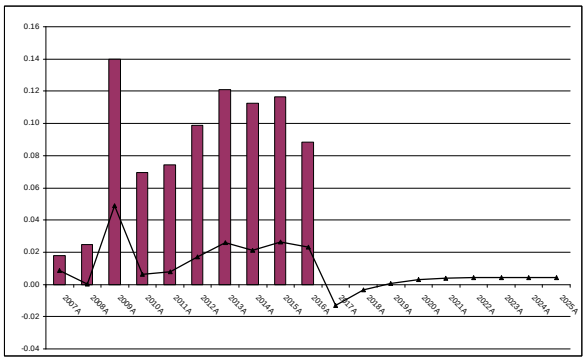

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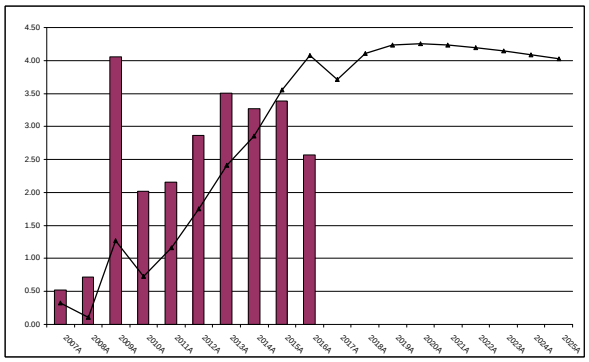
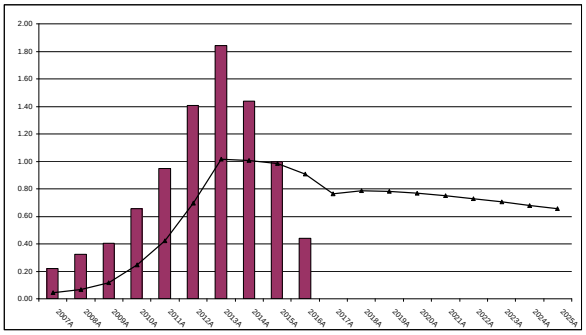


Net cohesion receipts (%) of GDP

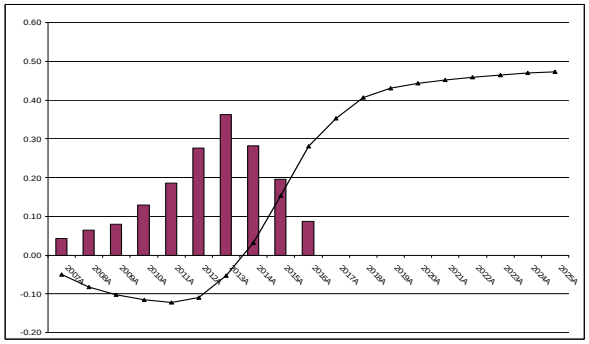
GDP impact

Figure C.8: Malta: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

Infrastructure:



Human capital investment:



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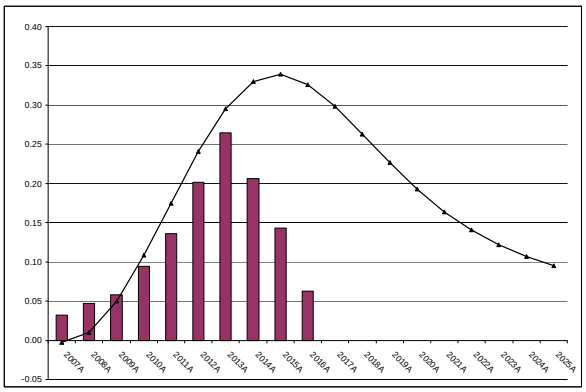
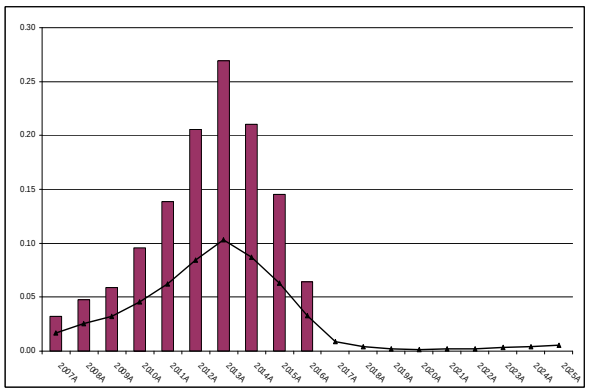


Assistance industry & services:



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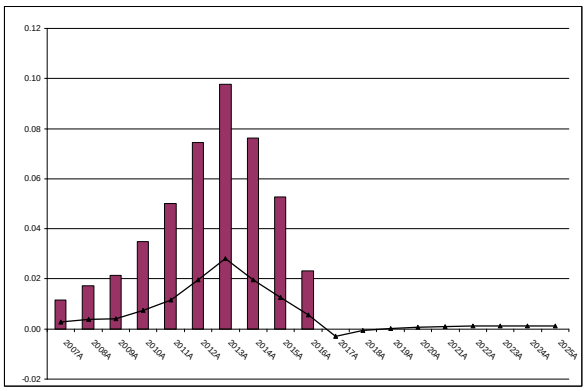

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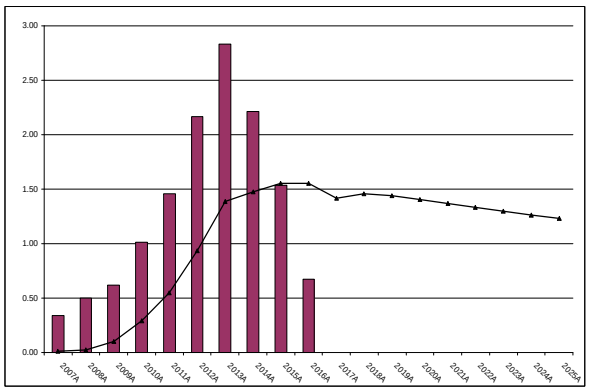
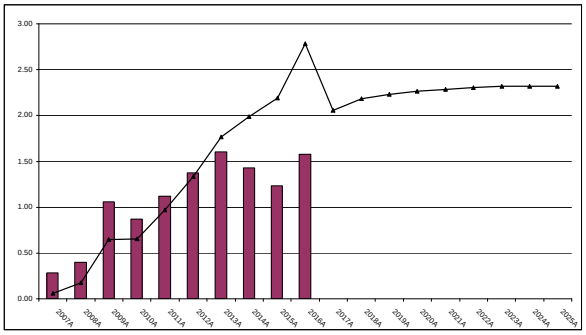


Net cohesion receipts (%) of GDP

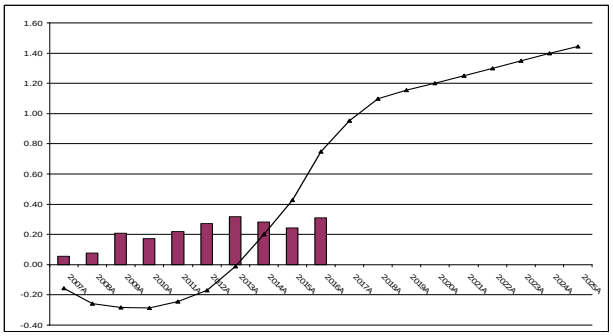
GDP impact

Figure C.9: Poland: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

Infrastructure:



Human capital investment:



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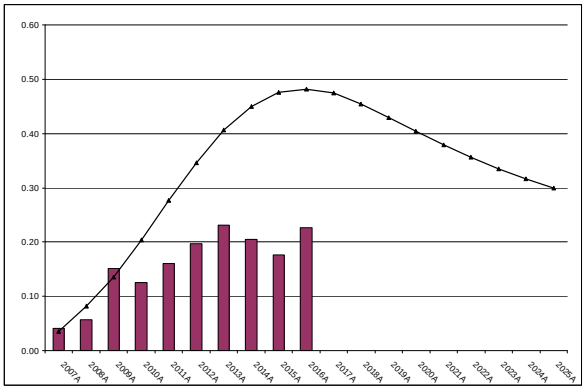
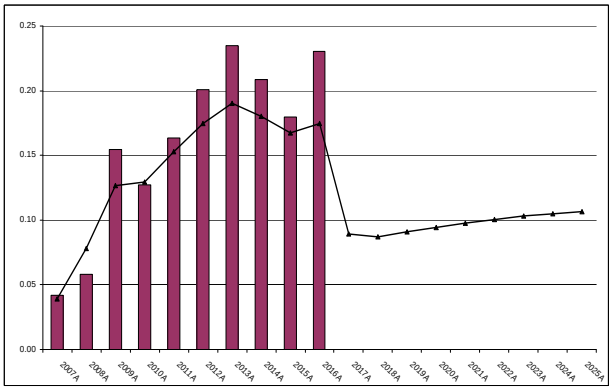


Assistance industry & services:



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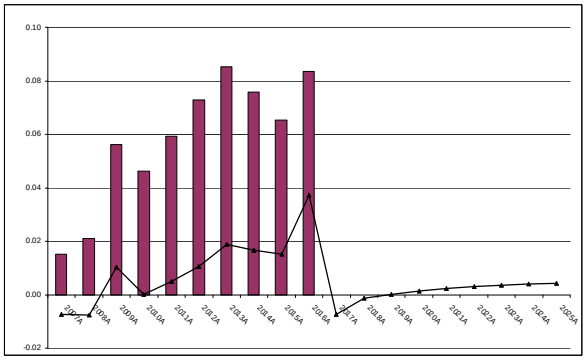

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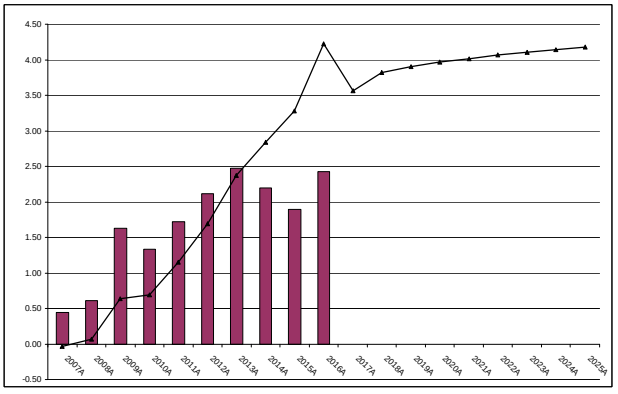
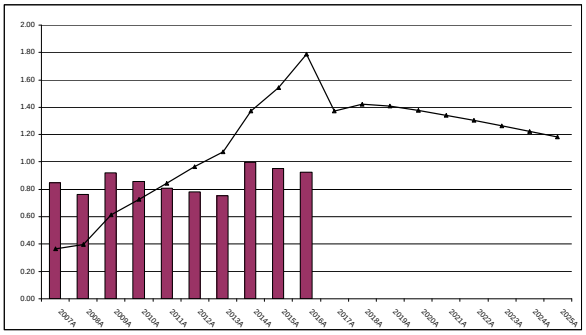


Net cohesion receipts (%) of GDP

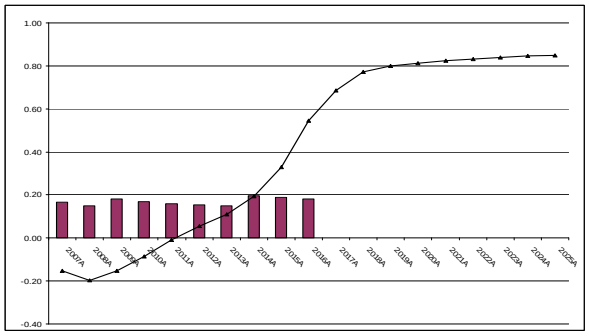
GDP impact

Figure C.10: Romania: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

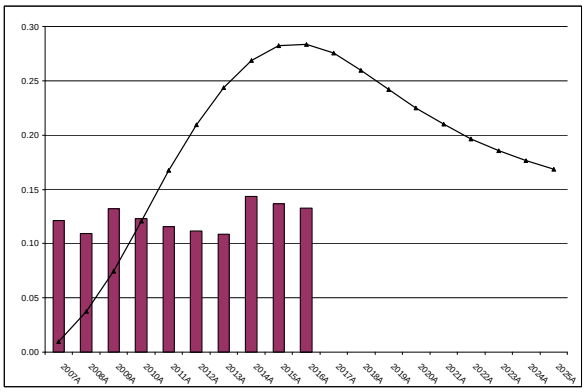
Infrastructure:



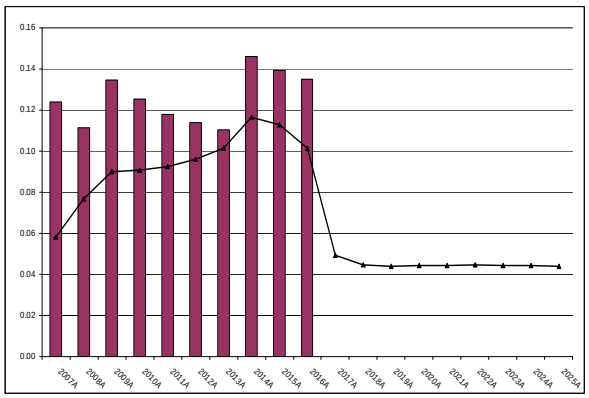
Human capital investment:



R&D investment:



Assistance industry & services:



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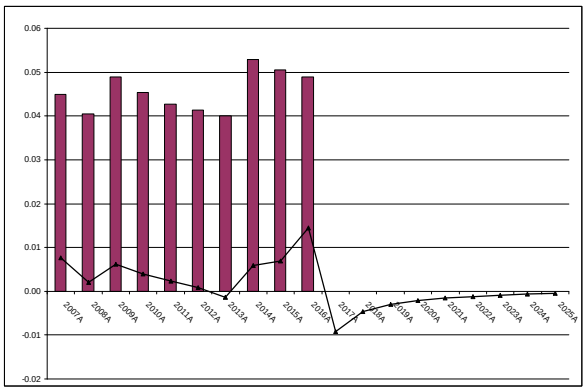

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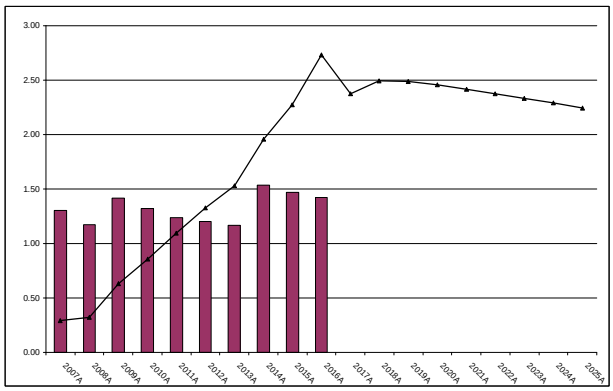
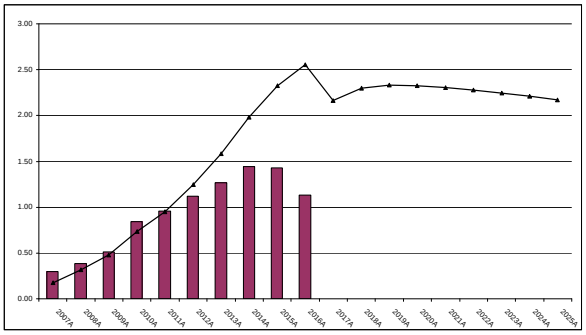


Net cohesion receipts (%) of GDP

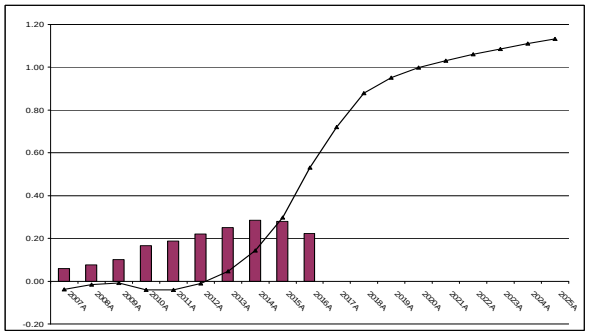
GDP impact

Figure C.11: Slovakia: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

Infrastructure:



Human capital investment:



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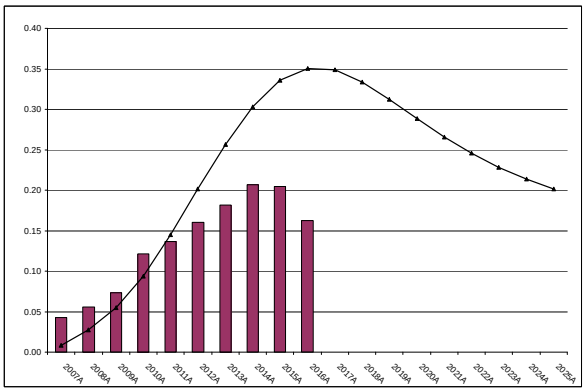
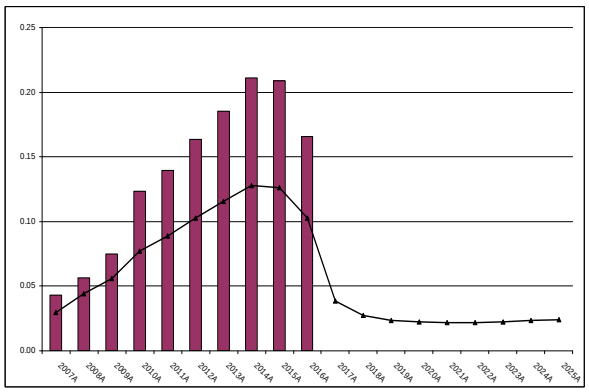


Assistance industry & services:



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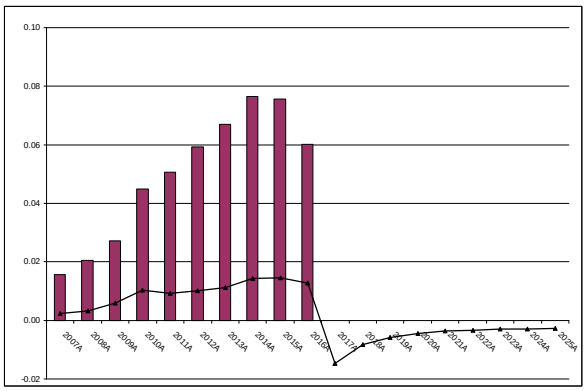

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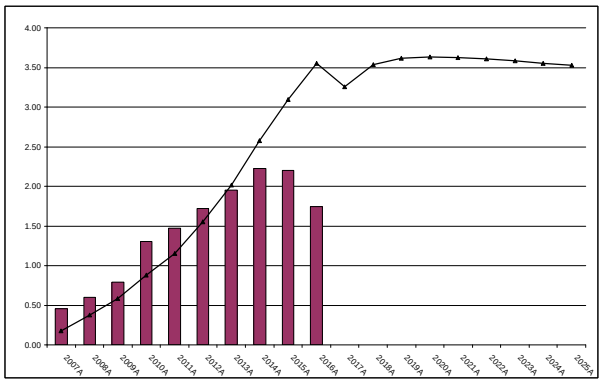
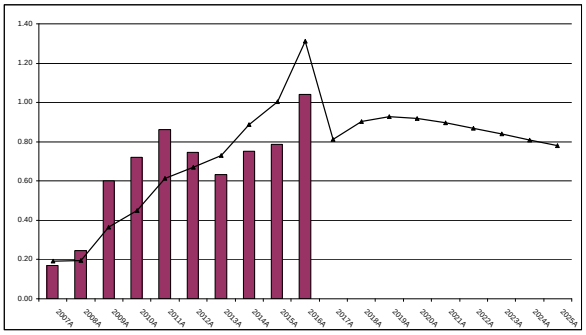


Net cohesion receipts (%) of GDP

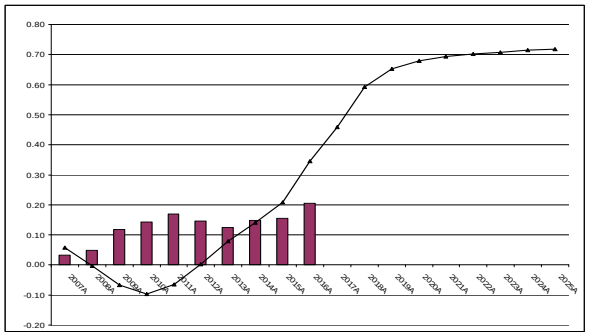
GDP impact

Figure C.12: Slovenia: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

Infrastructure:



Human capital investment:



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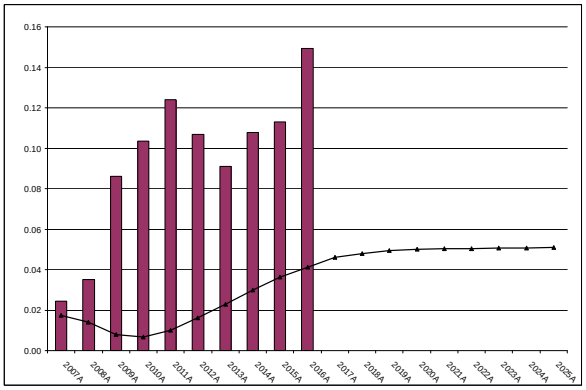
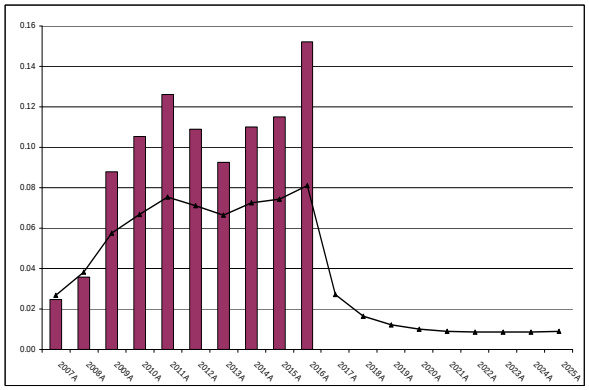


Assistance industry & services:



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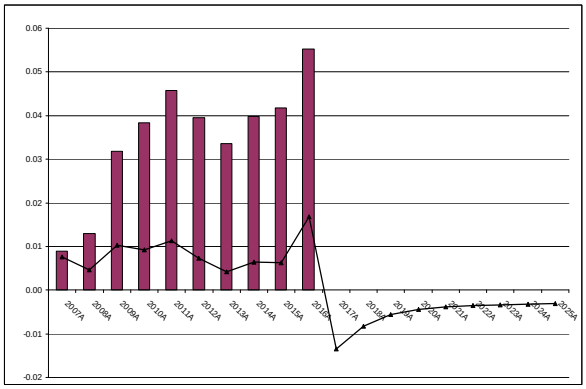

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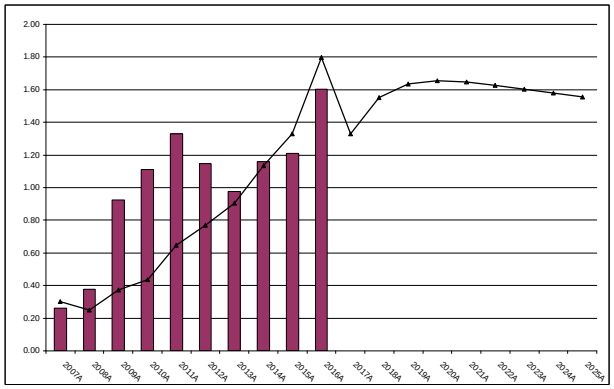
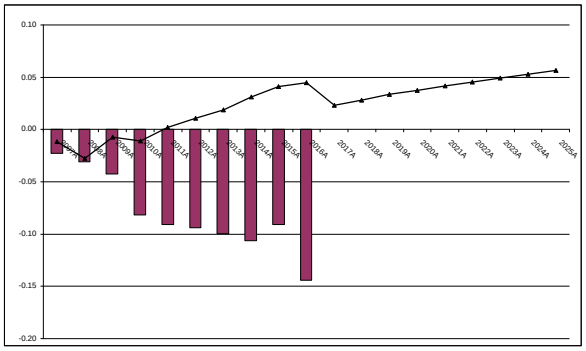


Net cohesion receipts (%) of GDP

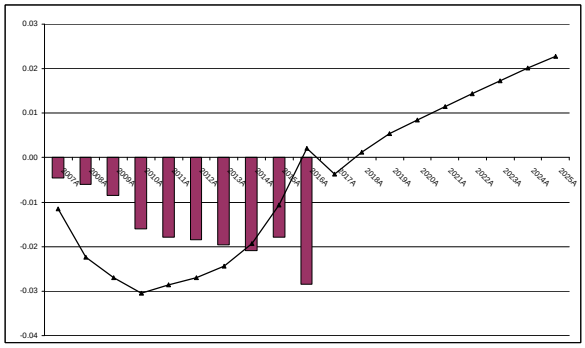
GDP impact

Figure C.13: Germany: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

Infrastructure:



Human capital investment:



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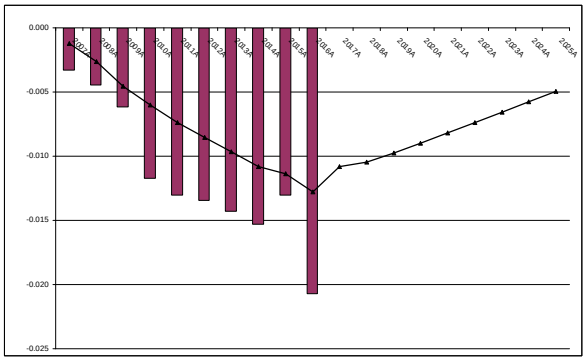
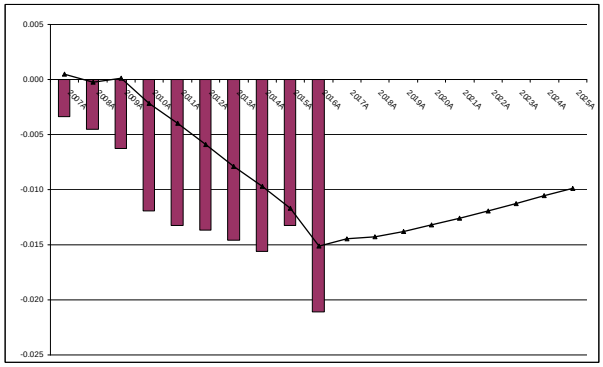
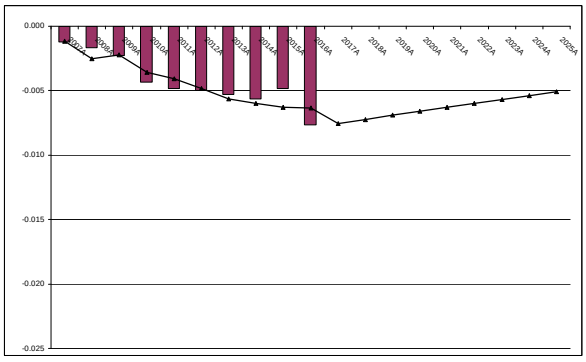


Assistance industry & services:



Technical assistance:



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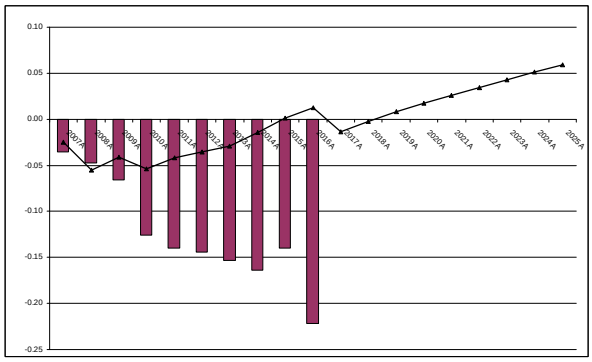
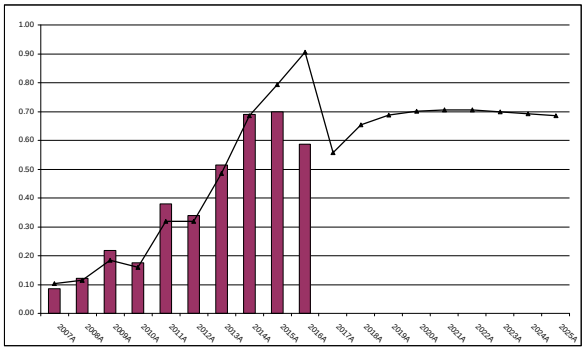


Net cohesion receipts (%) of GDP

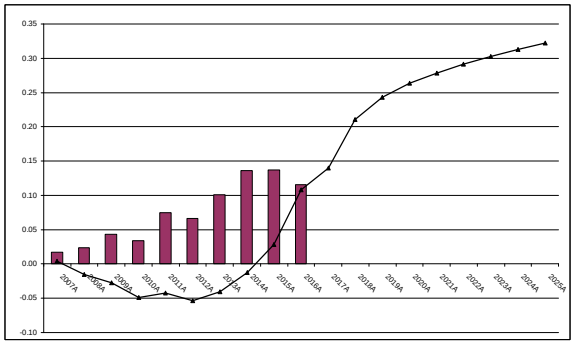
GDP impact

Figure C.14: Greece: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

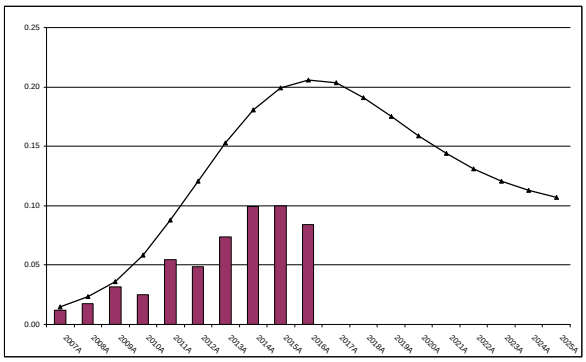
Infrastructure:



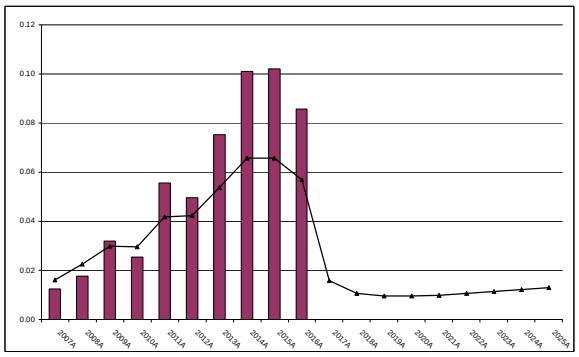
Human capital investment:



R&D investment:



Assistance industry & services:



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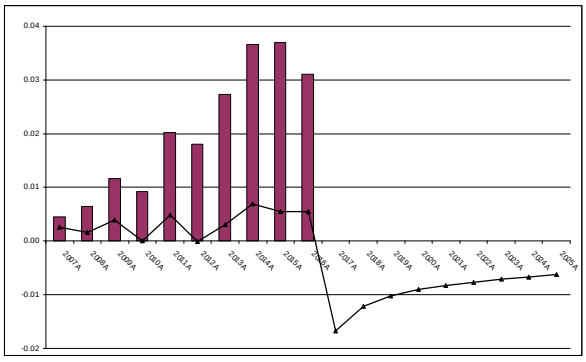

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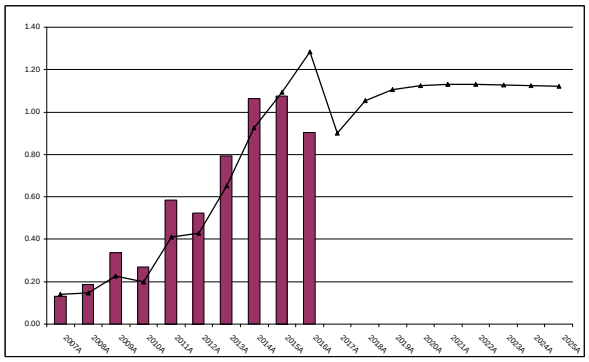
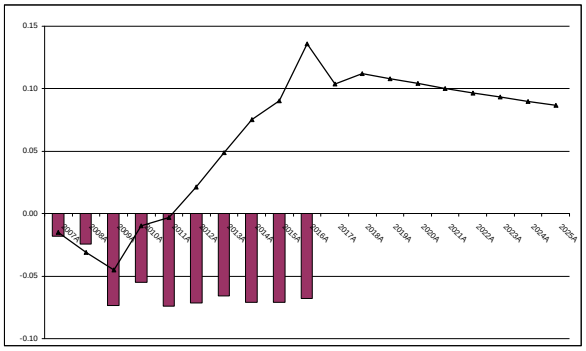


Net cohesion receipts (%) of GDP

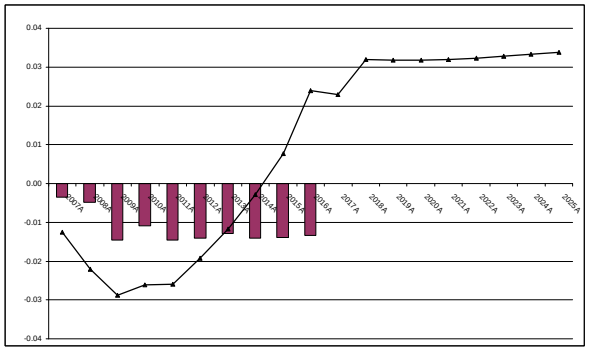
GDP impact

Figure C.15: Italy: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

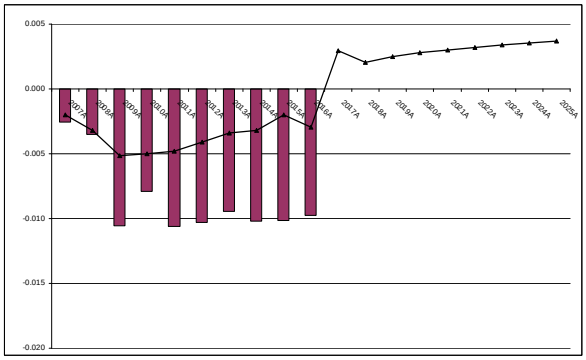
Infrastructure:



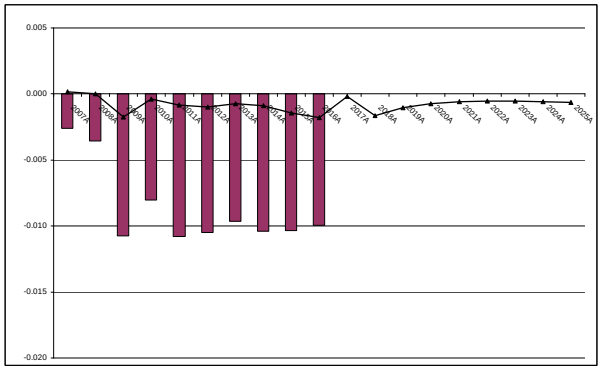
Human capital investment:



R&D investment:



Assistance industry & services:



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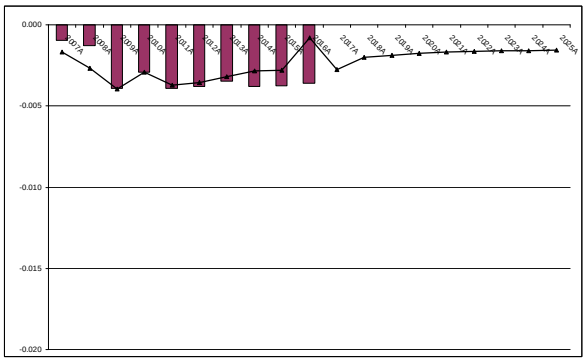

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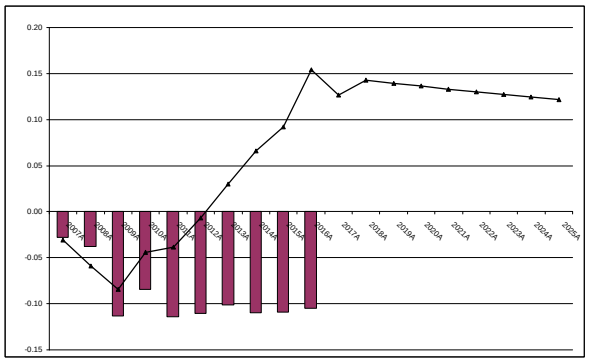
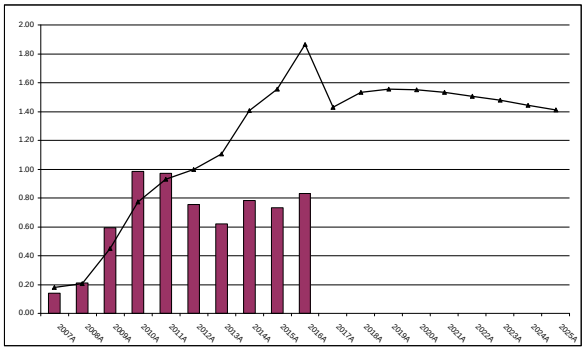


Net cohesion receipts (%) of GDP

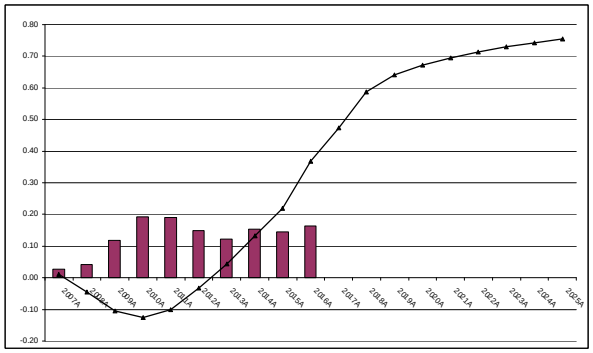
GDP impact

Figure C.16: Portugal: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

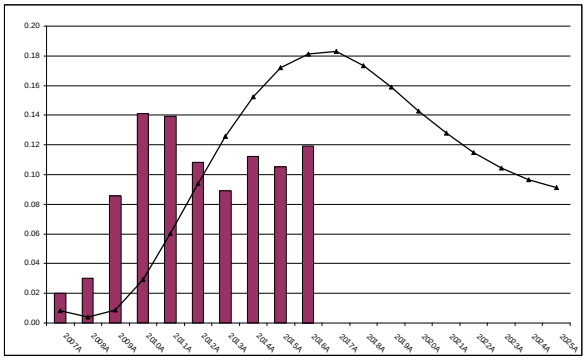
Infrastructure:



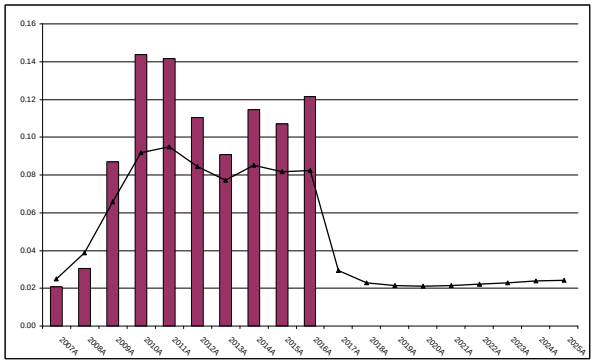
Human capital investment:



R&D investment:



Assistance industry & services:



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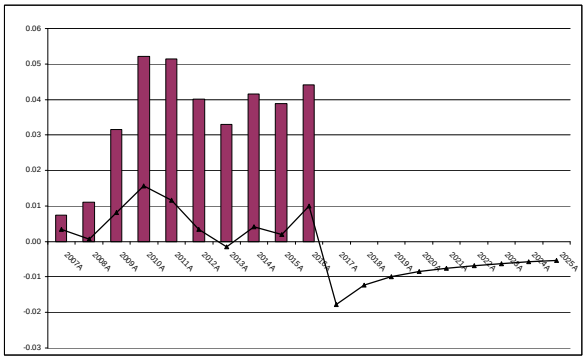

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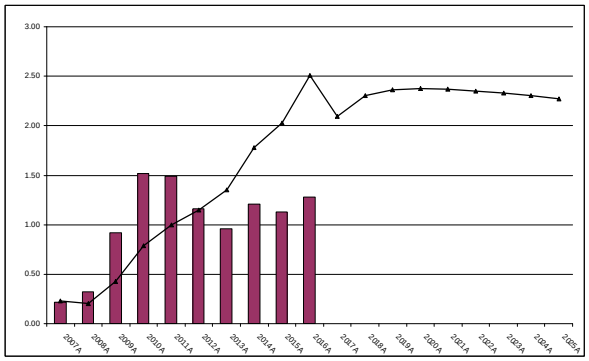
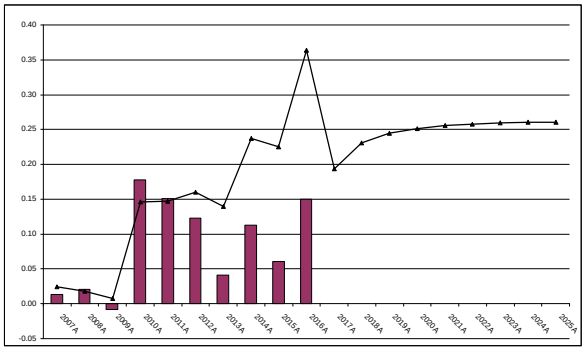


Net cohesion receipts (%) of GDP

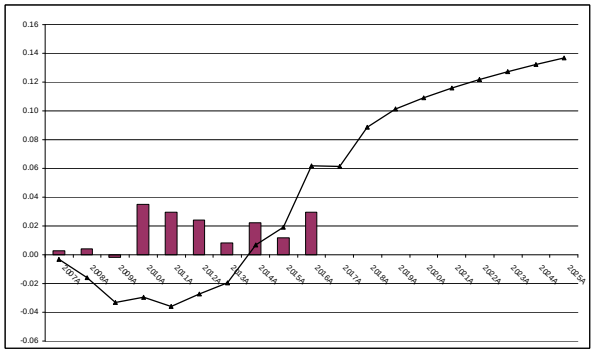
GDP impact

Figure C.17: Spain: net cohesion receipts (as % of GDP) and GDP impact (% difference from baseline)

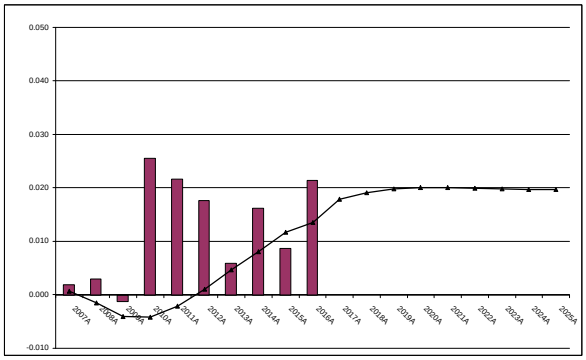
Infrastructure:



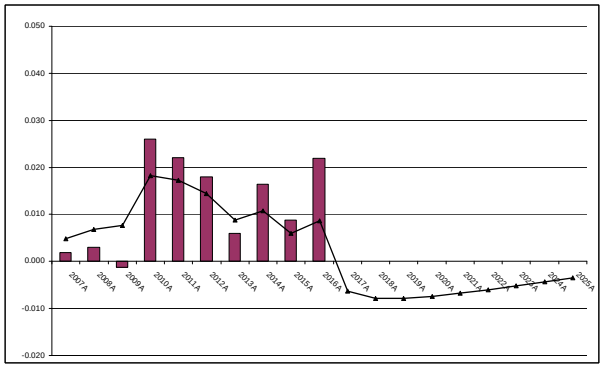
Human capital investment:



R&D investment:



Assistance industry & services:



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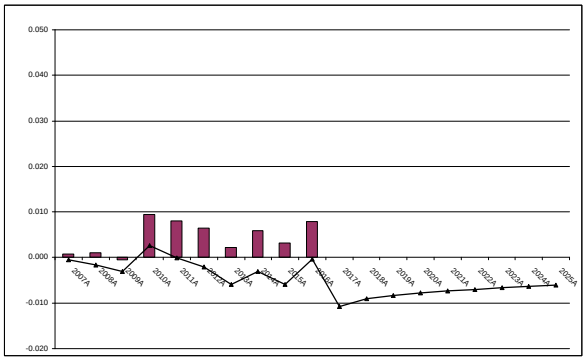

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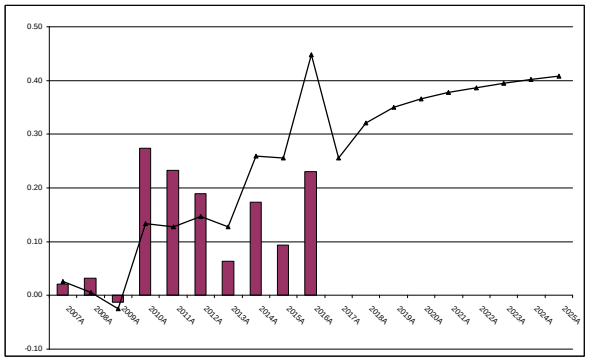

Net cohesion receipts (%) of GDP

GDP impact

Table 1: BG

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.31	0.32	0.31	0.76	0.92	1.17	1.43	2.12	2.48	3.30	2.62	2.99	3.11	3.14	3.13	3.10	3.07	3.03	2.99
Employment	0.26	0.25	0.18	0.34	0.23	0.14	0.17	0.46	0.53	0.60	-0.16	-0.03	0.17	0.28	0.34	0.37	0.40	0.42	0.43
. Low skilled	0.33	0.46	0.50	0.69	0.60	0.53	0.60	0.94	1.02	0.96	0.09	0.09	0.31	0.50	0.66	0.78	0.86	0.92	0.96
. Medium skilled	0.24	0.20	0.12	0.27	0.16	0.07	0.09	0.37	0.45	0.54	-0.20	-0.05	0.15	0.25	0.29	0.31	0.32	0.33	0.34
. High skilled	0.32	0.23	0.09	0.25	0.12	0.03	0.03	0.29	0.31	0.41	-0.35	-0.12	0.09	0.15	0.16	0.16	0.17	0.17	0.18
Consumption	1.22	1.88	2.03	2.13	2.28	2.50	2.76	3.05	3.34	3.69	4.01	4.31	4.43	4.45	4.43	4.39	4.33	4.27	4.21
. Liq. Constr.	0.42	0.84	1.14	1.60	1.85	2.11	2.45	3.06	3.49	3.92	3.52	3.66	3.88	4.09	4.24	4.35	4.42	4.45	4.47
. Non-constr.	1.47	2.20	2.31	2.30	2.41	2.63	2.86	3.05	3.30	3.62	4.17	4.52	4.59	4.56	4.49	4.40	4.31	4.22	4.12
Investment	0.07	0.04	-0.04	-0.11	-0.11	-0.04	0.08	0.20	0.40	0.69	1.11	1.49	1.73	1.88	1.99	2.06	2.12	2.16	2.20
Exports	-0.19	-0.37	-0.44	-0.51	-0.39	-0.23	-0.06	0.06	0.30	0.62	1.04	1.21	1.26	1.27	1.26	1.25	1.24	1.23	1.22
Imports	1.20	2.03	2.37	3.12	2.96	2.69	2.53	2.99	2.67	2.40	-0.15	-0.54	-0.52	-0.49	-0.46	-0.43	-0.41	-0.39	-0.38
Real.wages	0.05	0.24	0.40	0.47	0.71	0.97	1.27	1.49	1.82	2.01	2.49	2.49	2.48	2.48	2.45	2.41	2.36	2.31	2.26
Patents	0.15	0.60	1.21	1.85	2.49	3.10	3.66	4.11	4.43	4.61	4.69	4.75	4.81	4.86	4.90	4.94	4.96	4.98	5.00
Price.level.GDP	0.39	0.72	0.91	1.11	1.00	0.80	0.64	0.58	0.25	-0.22	-1.24	-1.55	-1.63	-1.65	-1.65	-1.64	-1.63	-1.63	-1.62
Consumer.price.level	0.27	0.51	0.64	0.79	0.74	0.63	0.54	0.51	0.29	-0.02	-0.72	-0.94	-1.00	-1.01	-1.02	-1.02	-1.02	-1.02	-1.02
terms of trade	0.22	0.53	0.70	0.77	0.68	0.49	0.30	0.12	-0.20	-0.67	-1.27	-1.63	-1.77	-1.81	-1.81	-1.79	-1.77	-1.75	-1.72
Dollar exch.rate	-0.08	-0.07	-0.04	0.02	0.09	0.16	0.22	0.28	0.34	0.38	0.40	0.37	0.36	0.34	0.33	0.31	0.29	0.28	0.26
Euro.exch.rate	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.02	0.06	0.11	0.14	0.14	0.14	0.12	0.11	0.06	0.00	-0.10	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09
Inflation	0.56	0.24	0.18	0.12	-0.17	-0.19	-0.12	-0.12	-0.38	-0.65	-0.92	-0.15	-0.05	-0.01	0.00	0.01	0.01	0.01	0.01
Gov Debt %GDP	-0.28	-0.65	-0.91	-1.30	-1.48	-1.62	-1.77	-2.14	-2.39	-2.73	-2.39	-2.43	-2.53	-2.61	-2.65	-2.64	-2.58	-2.47	-2.33
gov balance %GDP	0.24	0.27	0.22	0.25	0.19	0.17	0.19	0.31	0.32	0.35	0.11	0.16	0.18	0.16	0.12	0.07	0.02	-0.02	-0.06
Coh % GDP	0.50	0.65	0.80	1.89	1.81	1.76	1.71	2.67	2.55	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.50	0.65	0.80	1.89	1.81	1.76	1.71	2.67	2.55	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.77	-1.24	-1.40	-1.88	-1.75	-1.60	-1.50	-1.83	-1.68	-1.60	-0.06	0.07	-0.01	-0.05	-0.07	-0.09	-0.09	-0.10	-0.10

Note: percentage (points) difference from baseline

Table 2: CY

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.02	0.03	0.14	0.10	0.17	0.24	0.32	0.39	0.48	0.60	0.44	0.50	0.52	0.52	0.52	0.51	0.50	0.49	0.48
Employment	0.02	0.03	0.06	0.00	0.00	0.01	0.03	0.04	0.07	0.08	-0.07	-0.04	0.00	0.01	0.02	0.02	0.02	0.03	0.03
. Low skilled	0.02	0.04	0.07	0.01	0.00	0.02	0.05	0.07	0.10	0.09	-0.06	-0.05	-0.02	0.01	0.03	0.03	0.04	0.04	0.04
. Medium skilled	0.02	0.02	0.06	-0.01	-0.01	0.01	0.02	0.04	0.06	0.08	-0.07	-0.04	0.00	0.02	0.02	0.02	0.02	0.02	0.02
. High skilled	0.03	0.02	0.06	-0.02	0.00	0.01	0.02	0.02	0.03	0.07	-0.08	-0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Consumption	0.17	0.26	0.27	0.27	0.31	0.35	0.40	0.46	0.52	0.59	0.67	0.73	0.76	0.77	0.77	0.77	0.76	0.75	0.74
. Liq. Constr.	0.09	0.18	0.28	0.27	0.30	0.37	0.46	0.54	0.62	0.67	0.53	0.54	0.60	0.65	0.69	0.72	0.73	0.74	0.75
. Non-constr.	0.20	0.29	0.26	0.28	0.32	0.35	0.38	0.42	0.48	0.57	0.72	0.81	0.83	0.82	0.80	0.79	0.77	0.75	0.74
Investment	-0.01	-0.05	-0.11	-0.14	-0.14	-0.14	-0.14	-0.12	-0.06	0.04	0.19	0.29	0.35	0.38	0.39	0.40	0.40	0.40	0.41
Exports	-0.16	-0.23	-0.24	-0.22	-0.16	-0.11	-0.03	0.06	0.15	0.28	0.34	0.38	0.40	0.39	0.38	0.38	0.37	0.36	0.36
Imports	0.18	0.26	0.40	0.31	0.33	0.38	0.44	0.48	0.53	0.57	0.30	0.33	0.37	0.39	0.41	0.42	0.43	0.43	0.44
Real.wages	0.03	0.07	0.08	0.13	0.16	0.21	0.28	0.34	0.39	0.40	0.45	0.43	0.43	0.43	0.43	0.43	0.42	0.41	0.40
Patents	0.07	0.26	0.51	0.76	0.99	1.18	1.30	1.35	1.33	1.24	1.15	1.07	1.00	0.95	0.91	0.87	0.83	0.81	0.78
Price.level.GDP	0.09	0.20	0.31	0.31	0.34	0.39	0.43	0.44	0.43	0.36	0.13	0.08	0.07	0.07	0.08	0.08	0.09	0.09	0.09
Consumer.price.level	0.05	0.16	0.25	0.27	0.31	0.36	0.41	0.43	0.42	0.37	0.19	0.14	0.13	0.12	0.12	0.12	0.12	0.12	0.11
terms of trade	0.11	0.14	0.17	0.14	0.11	0.09	0.07	0.04	0.00	-0.07	-0.15	-0.19	-0.20	-0.19	-0.17	-0.15	-0.13	-0.12	-0.10
Dollar exch.rate	-0.12	-0.07	-0.04	0.02	0.09	0.15	0.22	0.28	0.34	0.38	0.39	0.37	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.05	0.03	0.06	0.08	0.08	0.08	0.07	0.07	0.05	0.04	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Inflation	0.13	0.11	0.08	-0.01	0.05	0.05	0.03	0.00	-0.03	-0.12	-0.20	-0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Gov Debt %GDP	-0.06	-0.14	-0.29	-0.24	-0.26	-0.30	-0.37	-0.42	-0.47	-0.54	-0.32	-0.35	-0.41	-0.45	-0.47	-0.48	-0.47	-0.45	-0.42
gov balance %GDP	0.02	0.01	0.02	-0.04	-0.03	-0.02	0.00	0.01	0.04	0.06	0.03	0.06	0.06	0.05	0.04	0.02	0.01	0.00	-0.01
Coh % GDP	0.08	0.12	0.34	0.23	0.28	0.33	0.39	0.40	0.42	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.08	0.12	0.34	0.23	0.28	0.33	0.39	0.40	0.42	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.11	-0.17	-0.23	-0.19	-0.19	-0.20	-0.20	-0.19	-0.19	-0.18	-0.06	-0.07	-0.09	-0.09	-0.10	-0.10	-0.10	-0.09	-0.09

Note: percentage (points) difference from baseline

Table 3: CZ

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	-0.12	-0.01	0.07	0.22	0.52	0.80	1.14	1.57	2.02	2.74	2.34	2.58	2.62	2.64	2.64	2.63	2.62	2.60	2.58
Employment	-0.06	-0.03	0.00	0.05	0.16	0.19	0.25	0.36	0.51	0.63	0.04	0.04	0.13	0.17	0.20	0.22	0.24	0.25	0.25
. Low skilled	-0.02	0.06	0.17	0.33	0.56	0.71	0.88	1.07	1.21	1.17	0.46	0.28	0.30	0.36	0.44	0.52	0.58	0.63	0.67
. Medium skilled	-0.07	-0.04	-0.02	0.04	0.14	0.16	0.21	0.32	0.47	0.61	0.03	0.03	0.12	0.17	0.19	0.21	0.22	0.23	0.23
. High skilled	0.04	0.07	0.04	0.05	0.12	0.10	0.11	0.17	0.27	0.40	-0.15	-0.06	0.05	0.09	0.09	0.10	0.10	0.11	0.11
Consumption	1.16	1.77	1.89	1.98	2.12	2.33	2.60	2.92	3.28	3.66	4.03	4.29	4.35	4.35	4.33	4.29	4.26	4.21	4.16
. Liq. Constr.	0.30	0.58	0.82	1.09	1.44	1.76	2.13	2.56	2.98	3.37	3.17	3.30	3.47	3.62	3.72	3.80	3.85	3.87	3.87
. Non-constr.	1.52	2.25	2.33	2.34	2.40	2.56	2.79	3.07	3.40	3.78	4.39	4.70	4.71	4.65	4.57	4.50	4.42	4.35	4.29
Investment	-0.06	-0.25	-0.44	-0.58	-0.63	-0.59	-0.45	-0.20	0.14	0.59	1.09	1.46	1.67	1.78	1.85	1.90	1.92	1.95	1.96
Exports	-0.21	-0.30	-0.26	-0.31	-0.29	-0.19	-0.06	0.10	0.30	0.68	0.88	0.97	1.00	1.01	1.01	1.02	1.02	1.02	1.02
Imports	1.65	2.68	3.11	3.44	3.76	3.64	3.45	3.21	2.76	2.16	-0.20	-0.41	-0.30	-0.25	-0.24	-0.24	-0.24	-0.25	-0.26
Real.wages	0.05	0.04	0.09	0.18	0.31	0.55	0.82	1.10	1.37	1.53	2.02	2.02	1.98	1.96	1.95	1.93	1.91	1.88	1.86
Patents	0.04	0.15	0.28	0.43	0.58	0.72	0.85	0.96	1.06	1.15	1.26	1.37	1.50	1.62	1.73	1.83	1.93	2.02	2.10
Price.level.GDP	0.16	0.57	0.98	1.42	1.90	2.25	2.53	2.75	2.80	2.62	1.66	1.20	0.88	0.59	0.31	0.05	-0.18	-0.40	-0.61
Consumer.price.level	-0.10	0.19	0.55	0.96	1.43	1.85	2.22	2.54	2.75	2.76	2.14	1.72	1.40	1.10	0.82	0.56	0.32	0.10	-0.10
terms of trade	0.79	1.09	1.24	1.30	1.25	1.07	0.81	0.47	0.01	-0.62	-1.24	-1.42	-1.45	-1.46	-1.46	-1.46	-1.46	-1.45	-1.45
Dollar exch.rate	-0.77	-0.76	-0.53	-0.16	0.33	0.91	1.49	2.08	2.64	3.12	3.27	2.96	2.63	2.33	2.04	1.78	1.54	1.31	1.10
Euro.exch.rate	-0.69	-0.69	-0.49	-0.18	0.24	0.75	1.27	1.79	2.29	2.73	2.86	2.58	2.27	1.98	1.71	1.47	1.24	1.03	0.83
Nom int rate	-0.08	0.20	0.38	0.51	0.62	0.63	0.62	0.58	0.48	0.30	-0.31	-0.41	-0.39	-0.36	-0.34	-0.31	-0.29	-0.28	-0.26
Inflation	0.29	0.41	0.41	0.45	0.44	0.31	0.26	0.16	0.01	-0.41	-0.94	-0.34	-0.30	-0.29	-0.27	-0.25	-0.23	-0.21	-0.20
Gov Debt %GDP	-0.07	-0.34	-0.55	-0.75	-1.00	-1.21	-1.44	-1.72	-2.02	-2.40	-2.22	-2.26	-2.33	-2.35	-2.32	-2.25	-2.15	-2.01	-1.85
gov balance %GDP	0.12	0.13	0.07	0.05	0.07	0.08	0.12	0.19	0.26	0.35	0.16	0.23	0.21	0.16	0.11	0.07	0.03	-0.01	-0.04
Coh % GDP	0.29	0.73	1.04	1.46	2.00	2.12	2.22	2.34	2.28	2.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.29	0.73	1.04	1.46	2.00	2.12	2.22	2.34	2.28	2.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.68	-1.20	-1.36	-1.57	-1.77	-1.75	-1.70	-1.67	-1.54	-1.33	-0.11	-0.04	-0.11	-0.14	-0.14	-0.14	-0.13	-0.13	-0.12

Note: percentage (points) difference from baseline

Table 4: DE

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	-0.03	-0.06	-0.04	-0.05	-0.04	-0.04	-0.03	-0.01	0.00	0.01	-0.01	0.00	0.01	0.02	0.03	0.03	0.04	0.05	0.06
Employment	-0.03	-0.06	-0.07	-0.10	-0.11	-0.13	-0.14	-0.14	-0.15	-0.15	-0.16	-0.15	-0.13	-0.11	-0.09	-0.07	-0.06	-0.04	-0.03
. Low skilled	-0.04	-0.10	-0.13	-0.18	-0.22	-0.25	-0.27	-0.29	-0.30	-0.30	-0.31	-0.29	-0.26	-0.22	-0.19	-0.15	-0.12	-0.09	-0.06
. Medium skilled	-0.03	-0.06	-0.06	-0.09	-0.10	-0.12	-0.13	-0.13	-0.13	-0.13	-0.15	-0.13	-0.11	-0.10	-0.08	-0.07	-0.05	-0.04	-0.03
. High skilled	-0.02	-0.04	-0.03	-0.05	-0.05	-0.06	-0.07	-0.07	-0.06	-0.06	-0.08	-0.07	-0.06	-0.05	-0.04	-0.03	-0.03	-0.02	-0.01
Consumption	-0.08	-0.14	-0.18	-0.21	-0.21	-0.21	-0.21	-0.20	-0.17	-0.15	-0.08	-0.06	-0.05	-0.03	-0.02	-0.01	0.01	0.02	0.03
. Liq. Constr.	-0.05	-0.10	-0.17	-0.25	-0.31	-0.35	-0.38	-0.41	-0.41	-0.46	-0.32	-0.27	-0.23	-0.19	-0.14	-0.10	-0.06	-0.03	0.01
. Non-constr.	-0.09	-0.16	-0.19	-0.19	-0.17	-0.15	-0.13	-0.10	-0.07	-0.02	0.02	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.04
Investment	-0.08	-0.19	-0.26	-0.29	-0.30	-0.29	-0.26	-0.21	-0.15	-0.08	-0.02	0.01	0.02	0.03	0.04	0.05	0.05	0.06	0.06
Exports	0.02	0.03	0.06	0.08	0.12	0.15	0.18	0.21	0.24	0.33	0.17	0.19	0.21	0.22	0.22	0.23	0.23	0.23	0.24
Imports	-0.08	-0.18	-0.18	-0.22	-0.22	-0.18	-0.13	-0.07	-0.01	0.06	0.15	0.22	0.25	0.26	0.27	0.27	0.27	0.28	0.28
Real.wages	0.01	0.02	0.02	0.06	0.08	0.11	0.14	0.16	0.18	0.18	0.18	0.16	0.14	0.13	0.11	0.10	0.09	0.09	0.08
Patents	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03
Price.level.GDP	0.01	0.04	0.10	0.14	0.21	0.27	0.32	0.36	0.39	0.40	0.38	0.36	0.35	0.33	0.31	0.29	0.27	0.25	0.23
Consumer.price.level	0.01	0.05	0.10	0.15	0.21	0.27	0.32	0.36	0.39	0.39	0.36	0.35	0.33	0.31	0.29	0.27	0.25	0.24	0.22
terms of trade	-0.01	-0.03	-0.04	-0.04	-0.05	-0.04	-0.02	0.00	0.01	0.03	0.08	0.10	0.11	0.11	0.10	0.10	0.10	0.10	0.09
Dollar exch.rate	-0.08	-0.07	-0.04	0.02	0.09	0.15	0.22	0.28	0.34	0.38	0.39	0.37	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.01	0.03	0.06	0.08	0.08	0.08	0.07	0.07	0.06	0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Inflation	0.02	0.04	0.06	0.05	0.06	0.06	0.05	0.04	0.02	0.00	-0.03	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Gov Debt %GDP	0.04	0.11	0.17	0.30	0.41	0.50	0.57	0.61	0.62	0.63	0.56	0.39	0.24	0.11	0.00	-0.10	-0.19	-0.26	-0.32
gov balance %GDP	-0.05	-0.08	-0.13	-0.17	-0.16	-0.14	-0.11	-0.10	-0.04	-0.04	0.15	0.15	0.14	0.12	0.11	0.10	0.09	0.08	0.07
Coh %GDP	0.01	0.02	0.07	0.06	0.07	0.07	0.06	0.06	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	-0.04	-0.05	-0.07	-0.13	-0.14	-0.14	-0.15	-0.16	-0.14	-0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	0.03	0.06	0.07	0.09	0.10	0.10	0.10	0.10	0.09	0.11	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Note: percentage (points) difference from baseline

Table 5: EE

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.16	0.11	1.06	0.94	1.44	1.88	2.35	2.65	2.93	3.71	3.02	3.27	3.33	3.30	3.23	3.14	3.03	2.93	2.82
Employment	0.11	0.18	0.55	0.21	0.12	0.10	0.08	0.00	0.03	0.17	-0.42	-0.36	-0.20	-0.13	-0.11	-0.11	-0.12	-0.12	-0.12
. Low skilled	0.22	0.50	0.96	0.64	0.44	0.29	0.17	0.02	-0.04	-0.06	-0.78	-0.84	-0.68	-0.54	-0.46	-0.41	-0.40	-0.39	-0.40
. Medium skilled	0.09	0.15	0.52	0.18	0.10	0.08	0.08	0.01	0.05	0.19	-0.39	-0.33	-0.17	-0.11	-0.09	-0.09	-0.09	-0.10	-0.10
. High skilled	0.16	0.14	0.48	0.08	0.05	0.06	0.06	-0.02	0.01	0.22	-0.39	-0.24	-0.08	-0.05	-0.06	-0.07	-0.07	-0.07	-0.07
Consumption	0.49	0.76	0.87	0.88	1.01	1.15	1.29	1.40	1.49	1.54	1.46	1.41	1.26	1.06	0.84	0.61	0.40	0.21	0.04
. Liq. Constr.	0.44	1.05	1.86	1.92	1.99	2.04	2.08	2.02	1.98	1.97	1.24	0.96	0.91	0.88	0.82	0.72	0.61	0.49	0.36
. Non-constr.	0.52	0.64	0.43	0.43	0.59	0.77	0.95	1.13	1.28	1.35	1.56	1.60	1.41	1.13	0.84	0.57	0.31	0.09	-0.11
Investment	0.18	0.26	0.20	0.17	0.21	0.29	0.39	0.53	0.68	0.85	1.08	1.27	1.36	1.38	1.35	1.30	1.23	1.16	1.09
Exports	-0.14	-0.32	-0.37	-0.20	0.09	0.54	1.00	1.39	1.73	2.10	2.47	2.70	2.79	2.81	2.80	2.78	2.74	2.70	2.65
Imports	0.52	0.96	2.21	1.82	1.81	1.67	1.50	1.14	0.83	0.99	-0.48	-0.71	-0.77	-0.83	-0.91	-0.98	-1.04	-1.10	-1.15
Real.wages	0.18	0.53	0.63	1.03	1.28	1.58	1.91	2.25	2.53	2.61	2.94	2.91	2.90	2.91	2.89	2.83	2.75	2.66	2.56
Patents	0.16	0.64	1.20	1.73	2.24	2.69	3.08	3.41	3.67	3.87	4.07	4.31	4.55	4.76	4.92	5.03	5.10	5.13	5.12
Price.level.GDP	0.41	0.95	1.49	1.04	0.52	-0.11	-0.83	-1.62	-2.36	-3.02	-4.21	-4.69	-4.82	-4.84	-4.82	-4.77	-4.71	-4.63	-4.55
Consumer.price.level	0.23	0.54	0.85	0.65	0.41	0.11	-0.25	-0.66	-1.06	-1.43	-2.10	-2.37	-2.46	-2.48	-2.48	-2.46	-2.43	-2.40	-2.36
terms of trade	0.28	0.71	0.94	0.69	0.17	-0.47	-1.18	-1.91	-2.62	-3.32	-4.09	-4.58	-4.78	-4.84	-4.82	-4.77	-4.70	-4.61	-4.51
Dollar exch.rate	-0.08	-0.08	-0.04	0.02	0.09	0.16	0.22	0.28	0.34	0.38	0.40	0.37	0.36	0.34	0.33	0.31	0.29	0.28	0.26
Euro.exch.rate	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.01	0.01	0.01	-0.04	-0.09	-0.16	-0.22	-0.26	-0.31	-0.35	-0.43	-0.39	-0.34	-0.30	-0.26	-0.22	-0.19	-0.15	-0.13
Inflation	0.62	0.55	0.25	-0.59	-0.54	-0.67	-0.75	-0.81	-0.68	-0.85	-1.13	-0.27	-0.08	0.00	0.04	0.06	0.07	0.08	0.09
Gov Debt %GDP	-0.08	-0.26	-0.60	-0.84	-0.93	-0.99	-1.00	-0.98	-0.91	-0.90	-0.69	-0.41	-0.23	-0.09	0.04	0.17	0.30	0.43	0.55
gov balance %GDP	0.12	0.18	0.38	0.18	0.12	0.08	0.05	0.00	-0.01	0.03	-0.23	-0.21	-0.15	-0.13	-0.13	-0.13	-0.14	-0.14	-0.14
Coh %GDP	0.47	0.71	3.28	2.49	2.88	2.80	2.72	2.33	1.99	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.47	0.71	3.28	2.49	2.88	2.80	2.72	2.33	1.99	2.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.36	-0.53	-1.52	-1.23	-1.42	-1.49	-1.56	-1.58	-1.66	-2.13	-1.18	-1.23	-1.30	-1.27	-1.19	-1.10	-1.00	-0.89	-0.80

Note: percentage (points) difference from baseline

Table 6: ES

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.03	0.01	-0.02	0.13	0.13	0.15	0.13	0.26	0.26	0.45	0.26	0.32	0.35	0.36	0.38	0.39	0.39	0.40	0.41
Employment	0.02	0.00	-0.02	0.04	-0.01	-0.07	-0.12	-0.08	-0.09	-0.04	-0.17	-0.15	-0.10	-0.07	-0.04	-0.02	0.00	0.02	0.04
. Low skilled	0.01	-0.01	-0.02	0.03	-0.02	-0.09	-0.15	-0.12	-0.12	-0.08	-0.21	-0.19	-0.14	-0.10	-0.06	-0.02	0.00	0.03	0.05
. Medium skilled	0.02	-0.01	-0.02	0.05	0.01	-0.06	-0.10	-0.06	-0.06	0.00	-0.14	-0.12	-0.08	-0.05	-0.03	-0.01	0.00	0.02	0.03
. High skilled	0.04	0.02	-0.01	0.06	0.01	-0.04	-0.08	-0.03	-0.04	0.03	-0.12	-0.08	-0.04	-0.02	-0.01	-0.01	0.00	0.01	0.02
Consumption	0.12	0.16	0.12	0.08	0.07	0.10	0.14	0.18	0.24	0.28	0.40	0.47	0.50	0.52	0.54	0.55	0.57	0.58	0.59
. Liq. Constr.	0.01	0.03	-0.02	0.00	-0.03	-0.06	-0.10	-0.10	-0.07	-0.06	0.06	0.11	0.17	0.23	0.29	0.35	0.40	0.44	0.49
. Non-constr.	0.17	0.22	0.18	0.12	0.12	0.18	0.26	0.32	0.38	0.44	0.57	0.64	0.66	0.66	0.65	0.65	0.65	0.65	0.64
Investment	-0.01	-0.07	-0.15	-0.23	-0.27	-0.26	-0.23	-0.19	-0.13	-0.06	0.04	0.12	0.17	0.20	0.22	0.23	0.25	0.26	0.27
Exports	-0.10	-0.16	-0.15	-0.16	-0.14	-0.10	-0.04	0.04	0.12	0.22	0.21	0.26	0.28	0.29	0.30	0.31	0.31	0.32	0.32
Imports	0.27	0.46	0.56	0.89	0.82	0.66	0.47	0.54	0.42	0.51	0.03	-0.01	0.02	0.04	0.06	0.07	0.09	0.10	0.11
Real.wages	0.01	0.04	0.08	0.07	0.14	0.21	0.28	0.30	0.35	0.34	0.43	0.41	0.38	0.37	0.35	0.34	0.32	0.31	0.30
Patents	0.02	0.09	0.17	0.24	0.29	0.33	0.36	0.37	0.38	0.37	0.37	0.37	0.38	0.40	0.41	0.42	0.44	0.45	0.46
Price.level.GDP	0.08	0.19	0.29	0.44	0.47	0.46	0.44	0.47	0.45	0.44	0.27	0.22	0.20	0.19	0.17	0.16	0.14	0.12	0.11
Consumer.price.level	0.07	0.16	0.26	0.39	0.43	0.43	0.42	0.45	0.44	0.43	0.28	0.24	0.22	0.20	0.19	0.17	0.16	0.14	0.13
terms of trade	0.08	0.15	0.21	0.25	0.24	0.19	0.14	0.10	0.06	0.01	-0.06	-0.10	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12
Dollar exch.rate	-0.08	-0.07	-0.04	0.02	0.09	0.15	0.22	0.28	0.34	0.38	0.39	0.37	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.01	0.03	0.06	0.08	0.08	0.08	0.07	0.07	0.06	0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Inflation	0.13	0.10	0.12	0.12	0.00	-0.02	0.00	0.02	-0.02	-0.05	-0.16	-0.02	-0.02	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02
Gov Debt %GDP	-0.02	-0.03	0.02	-0.01	0.08	0.18	0.30	0.30	0.33	0.24	0.28	0.15	0.01	-0.12	-0.24	-0.33	-0.41	-0.47	-0.52
gov balance %GDP	-0.01	-0.04	-0.11	-0.08	-0.11	-0.11	-0.11	-0.05	-0.02	0.03	0.11	0.13	0.14	0.13	0.12	0.10	0.09	0.08	0.06
Coh %GDP	0.07	0.10	0.13	0.46	0.44	0.40	0.28	0.40	0.28	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.02	0.03	-0.01	0.27	0.23	0.19	0.06	0.17	0.09	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.08	-0.13	-0.14	-0.23	-0.20	-0.16	-0.11	-0.11	-0.07	-0.08	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.03

Note: percentage (points) difference from baseline

Table 7: HL

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.14	0.15	0.23	0.20	0.41	0.43	0.65	0.92	1.09	1.28	0.90	1.06	1.11	1.13	1.14	1.14	1.13	1.13	1.12
Employment	0.12	0.13	0.10	0.02	0.06	0.00	0.06	0.15	0.15	0.07	-0.27	-0.19	-0.09	-0.03	0.02	0.04	0.07	0.08	0.10
. Low skilled	0.12	0.14	0.12	0.05	0.07	0.02	0.09	0.18	0.17	0.06	-0.28	-0.23	-0.13	-0.05	0.01	0.05	0.08	0.11	0.13
. Medium skilled	0.11	0.12	0.09	0.01	0.05	-0.02	0.05	0.14	0.15	0.08	-0.26	-0.18	-0.07	-0.01	0.02	0.04	0.06	0.07	0.09
. High skilled	0.16	0.15	0.10	0.02	0.07	0.00	0.05	0.10	0.07	0.03	-0.25	-0.11	-0.02	0.01	0.01	0.02	0.03	0.03	0.04
Consumption	0.44	0.67	0.68	0.67	0.70	0.73	0.80	0.89	0.99	1.12	1.29	1.44	1.50	1.54	1.56	1.57	1.58	1.59	1.59
. Liq. Constr.	0.17	0.37	0.45	0.44	0.53	0.54	0.68	0.84	0.94	0.89	0.74	0.80	0.93	1.05	1.16	1.24	1.32	1.37	1.41
. Non-constr.	0.57	0.80	0.79	0.78	0.78	0.82	0.86	0.91	1.02	1.22	1.54	1.73	1.77	1.76	1.75	1.73	1.71	1.69	1.67
Investment	0.01	-0.06	-0.16	-0.24	-0.30	-0.33	-0.34	-0.29	-0.15	0.09	0.40	0.63	0.77	0.84	0.88	0.91	0.92	0.93	0.93
Exports	-0.24	-0.40	-0.47	-0.45	-0.43	-0.34	-0.27	-0.17	0.00	0.26	0.49	0.56	0.56	0.56	0.55	0.54	0.54	0.53	0.53
Imports	0.71	1.25	1.54	1.51	1.75	1.62	1.79	1.95	1.71	1.21	-0.10	-0.22	-0.13	-0.06	-0.01	0.04	0.07	0.10	0.12
Real.wages	0.01	0.09	0.16	0.26	0.32	0.45	0.54	0.62	0.73	0.82	1.03	0.98	0.94	0.92	0.90	0.87	0.85	0.83	0.81
Patents	0.11	0.46	0.91	1.40	1.85	2.23	2.49	2.58	2.49	2.28	2.04	1.86	1.73	1.63	1.57	1.52	1.49	1.47	1.46
Price.level.GDP	0.20	0.40	0.53	0.58	0.68	0.68	0.73	0.74	0.62	0.37	-0.07	-0.17	-0.18	-0.18	-0.18	-0.18	-0.19	-0.19	-0.20
Consumer.price.level	0.17	0.34	0.45	0.50	0.59	0.60	0.65	0.67	0.57	0.37	0.00	-0.08	-0.09	-0.09	-0.10	-0.10	-0.11	-0.12	-0.13
terms of trade	0.16	0.34	0.43	0.45	0.46	0.43	0.40	0.33	0.18	-0.06	-0.32	-0.45	-0.48	-0.48	-0.47	-0.46	-0.44	-0.43	-0.42
Dollar exch.rate	-0.08	-0.07	-0.04	0.02	0.09	0.15	0.22	0.28	0.34	0.38	0.39	0.37	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.01	0.03	0.06	0.08	0.09	0.08	0.08	0.07	0.05	0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Inflation	0.30	0.16	0.10	0.05	0.08	0.00	0.05	-0.03	-0.16	-0.32	-0.38	-0.03	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Gov Debt %GDP	-0.29	-0.53	-0.67	-0.53	-0.66	-0.51	-0.66	-0.87	-0.89	-0.84	-0.10	-0.31	-0.55	-0.74	-0.88	-0.99	-1.05	-1.08	-1.08
gov balance %GDP	0.07	0.01	-0.08	-0.17	-0.14	-0.15	-0.08	-0.03	0.03	0.04	0.13	0.20	0.20	0.18	0.16	0.13	0.10	0.07	0.04
Coh %GDP	0.18	0.25	0.48	0.45	0.79	0.73	1.01	1.29	1.26	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.13	0.19	0.34	0.27	0.59	0.52	0.79	1.06	1.07	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.26	-0.44	-0.52	-0.50	-0.57	-0.51	-0.55	-0.59	-0.50	-0.33	0.09	0.11	0.07	0.05	0.03	0.02	0.01	0.00	-0.01

Note: percentage (points) difference from baseline

Table 8: HU

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.00	0.02	0.50	0.88	1.51	2.12	2.84	3.24	3.35	4.81	3.96	4.24	4.28	4.29	4.28	4.25	4.22	4.19	4.14
Employment	0.03	0.06	0.32	0.43	0.60	0.71	0.82	0.65	0.59	1.26	0.37	0.37	0.49	0.58	0.64	0.69	0.74	0.77	0.79
. Low skilled	0.14	0.38	0.86	1.21	1.56	1.80	1.95	1.82	1.75	2.23	1.33	1.17	1.25	1.38	1.53	1.67	1.80	1.89	1.96
. Medium skilled	-0.01	-0.02	0.22	0.31	0.46	0.55	0.65	0.48	0.42	1.13	0.24	0.25	0.38	0.46	0.51	0.55	0.58	0.60	0.62
. High skilled	0.42	0.39	0.42	0.31	0.34	0.35	0.39	0.18	0.09	0.79	-0.17	0.02	0.20	0.25	0.27	0.28	0.30	0.31	0.32
Consumption	1.67	2.60	2.86	3.07	3.40	3.80	4.27	4.76	5.22	5.66	5.98	6.31	6.39	6.39	6.36	6.32	6.26	6.19	6.11
. Liq. Constr.	0.55	1.13	1.81	2.32	2.90	3.42	3.96	4.27	4.59	5.58	5.09	5.38	5.69	5.93	6.12	6.25	6.33	6.38	6.38
. Non-constr.	2.06	3.11	3.23	3.34	3.57	3.93	4.38	4.93	5.45	5.69	6.29	6.63	6.64	6.55	6.45	6.34	6.23	6.13	6.02
Investment	-0.01	-0.16	-0.31	-0.37	-0.29	-0.09	0.23	0.64	1.08	1.49	1.99	2.39	2.61	2.75	2.85	2.92	2.98	3.03	3.06
Exports	-0.40	-0.60	-0.70	-0.64	-0.49	-0.23	0.10	0.54	0.85	0.98	1.45	1.57	1.59	1.59	1.59	1.59	1.58	1.57	1.56
Imports	2.24	3.52	4.62	4.80	4.83	4.40	3.82	2.54	1.49	2.42	-0.69	-0.98	-0.86	-0.81	-0.79	-0.78	-0.77	-0.76	-0.75
Real.wages	0.11	0.29	0.37	0.64	0.96	1.37	1.76	2.27	2.70	2.59	3.25	3.26	3.17	3.10	3.03	2.96	2.89	2.83	2.77
Patents	0.27	1.05	1.99	2.90	3.69	4.32	4.77	5.06	5.23	5.24	5.19	5.18	5.20	5.23	5.25	5.27	5.28	5.29	5.29
Price.level.GDP	0.36	0.96	1.71	2.27	2.75	3.02	3.12	2.85	2.52	2.56	1.33	0.71	0.25	-0.19	-0.60	-0.99	-1.36	-1.70	-2.01
Consumer.price.level	0.03	0.49	1.14	1.74	2.32	2.76	3.06	3.07	2.93	3.01	2.20	1.62	1.15	0.70	0.28	-0.12	-0.49	-0.84	-1.17
terms of trade	0.92	1.34	1.51	1.39	1.09	0.61	0.01	-0.64	-1.11	-1.57	-2.29	-2.50	-2.53	-2.53	-2.52	-2.51	-2.50	-2.48	-2.46
Dollar exch.rate	-0.73	-0.57	-0.12	0.56	1.31	2.09	2.82	3.38	3.67	3.91	4.01	3.56	3.07	2.61	2.17	1.76	1.37	1.00	0.65
Euro.exch.rate	-0.65	-0.50	-0.08	0.54	1.23	1.94	2.59	3.09	3.33	3.52	3.60	3.17	2.70	2.26	1.84	1.44	1.07	0.72	0.39
Nom int rate	0.04	0.39	0.72	0.83	0.87	0.81	0.68	0.39	0.14	0.27	-0.45	-0.58	-0.55	-0.53	-0.51	-0.48	-0.46	-0.44	-0.42
Inflation	0.58	0.63	0.71	0.51	0.41	0.21	-0.01	-0.34	-0.21	-0.23	-1.24	-0.48	-0.45	-0.43	-0.41	-0.38	-0.36	-0.34	-0.31
Gov Debt %GDP	-0.28	-0.84	-1.59	-2.03	-2.55	-2.97	-3.43	-3.60	-3.69	-4.85	-4.03	-4.25	-4.43	-4.49	-4.45	-4.33	-4.14	-3.89	-3.59
gov balance %GDP	0.26	0.14	0.03	-0.05	-0.01	0.06	0.17	0.26	0.40	0.53	0.46	0.61	0.53	0.42	0.33	0.24	0.16	0.08	0.02
Coh %GDP	0.54	0.80	2.06	2.52	3.13	3.26	3.38	2.52	1.48	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.54	0.80	2.06	2.52	3.13	3.26	3.38	2.52	1.48	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-1.12	-1.80	-2.45	-2.60	-2.70	-2.56	-2.35	-1.69	-1.12	-1.92	-0.12	0.01	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12

Note: percentage (points) difference from baseline

Table 9: IT

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	-0.03	-0.06	-0.08	-0.04	-0.04	-0.01	0.03	0.07	0.09	0.16	0.13	0.14	0.14	0.14	0.13	0.13	0.13	0.12	0.12
Employment	-0.04	-0.08	-0.10	-0.08	-0.08	-0.07	-0.05	-0.03	-0.02	0.01	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
. Low skilled	-0.04	-0.10	-0.13	-0.12	-0.12	-0.10	-0.07	-0.05	-0.03	0.00	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
. Medium skilled	-0.03	-0.06	-0.08	-0.05	-0.06	-0.04	-0.03	-0.02	-0.01	0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
. High skilled	-0.02	-0.05	-0.06	-0.03	-0.04	-0.03	-0.02	-0.01	0.00	0.02	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumption	-0.08	-0.14	-0.20	-0.22	-0.23	-0.20	-0.17	-0.15	-0.08	-0.06	0.12	0.16	0.15	0.14	0.13	0.13	0.12	0.12	0.12
. Liq. Constr.	-0.15	-0.25	-0.47	-0.54	-0.63	-0.56	-0.51	-0.52	-0.37	-0.40	0.17	0.27	0.24	0.22	0.21	0.20	0.19	0.19	0.18
. Non-constr.	-0.05	-0.09	-0.10	-0.11	-0.09	-0.06	-0.04	-0.01	0.03	0.07	0.11	0.12	0.11	0.11	0.10	0.10	0.10	0.10	0.10
Investment	-0.06	-0.14	-0.18	-0.19	-0.19	-0.16	-0.13	-0.07	-0.02	0.04	0.09	0.11	0.12	0.12	0.12	0.12	0.11	0.11	0.11
Exports	0.01	0.00	0.04	0.05	0.09	0.12	0.16	0.22	0.26	0.34	0.21	0.23	0.25	0.25	0.26	0.26	0.26	0.26	0.26
Imports	-0.06	-0.16	-0.23	-0.19	-0.22	-0.19	-0.14	-0.11	-0.08	0.03	0.07	0.15	0.16	0.17	0.17	0.18	0.18	0.19	0.19
Real.wages	0.01	0.03	0.04	0.04	0.06	0.08	0.09	0.10	0.12	0.12	0.14	0.13	0.13	0.12	0.12	0.12	0.11	0.11	0.11
Patents	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.08	0.08
Price.level.GDP	0.00	0.02	0.06	0.13	0.18	0.23	0.28	0.32	0.35	0.37	0.34	0.33	0.32	0.30	0.29	0.28	0.26	0.25	0.23
Consumer.price.level	0.01	0.03	0.07	0.13	0.18	0.24	0.29	0.33	0.35	0.37	0.34	0.33	0.32	0.30	0.29	0.27	0.26	0.24	0.23
terms of trade	-0.01	-0.02	-0.04	-0.04	-0.05	-0.06	-0.05	-0.06	-0.05	-0.04	-0.01	0.00	0.01	0.02	0.02	0.02	0.03	0.03	0.03
Dollar exch.rate	-0.08	-0.07	-0.04	0.02	0.09	0.15	0.22	0.28	0.34	0.38	0.39	0.37	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.01	0.03	0.06	0.08	0.08	0.08	0.07	0.07	0.06	0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Inflation	0.01	0.02	0.05	0.06	0.05	0.06	0.05	0.03	0.03	0.00	-0.03	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02
Gov Debt %GDP	0.03	0.05	0.07	0.03	0.02	-0.01	-0.05	-0.08	-0.10	-0.15	-0.11	-0.11	-0.10	-0.09	-0.08	-0.06	-0.06	-0.05	-0.04
gov balance %GDP	-0.01	-0.02	-0.04	-0.06	-0.05	-0.06	-0.05	-0.04	-0.03	-0.01	0.02	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Coh %GDP	0.02	0.03	0.03	0.10	0.09	0.10	0.11	0.12	0.08	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	-0.03	-0.04	-0.11	-0.08	-0.11	-0.11	-0.10	-0.11	-0.11	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	0.02	0.03	0.06	0.05	0.06	0.06	0.06	0.07	0.07	0.07	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02

Note: percentage (points) difference from baseline

Table 10:LT

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.32	0.11	1.25	0.72	1.15	1.75	2.40	2.85	3.55	4.09	3.73	4.13	4.25	4.27	4.24	4.19	4.14	4.07	4.01
Employment	0.28	0.37	0.90	0.13	0.02	0.25	0.44	0.41	0.51	0.34	-0.22	-0.03	0.18	0.28	0.33	0.35	0.36	0.37	0.37
. Low skilled	0.48	0.92	1.57	0.84	0.62	0.82	1.03	1.00	0.97	0.58	-0.15	-0.07	0.20	0.44	0.61	0.72	0.80	0.84	0.86
. Medium skilled	0.26	0.34	0.86	0.10	-0.02	0.21	0.40	0.39	0.49	0.34	-0.21	-0.02	0.19	0.29	0.32	0.34	0.34	0.35	0.35
. High skilled	0.31	0.18	0.74	-0.14	-0.13	0.14	0.26	0.15	0.28	0.19	-0.36	-0.06	0.12	0.14	0.13	0.13	0.13	0.14	0.14
Consumption	1.73	2.62	2.74	2.87	3.20	3.53	3.88	4.31	4.79	5.29	5.79	6.14	6.26	6.26	6.21	6.13	6.04	5.93	5.82
. Liq. Constr.	0.61	1.41	2.48	2.51	2.77	3.34	4.01	4.53	5.04	5.28	5.07	5.26	5.55	5.80	5.98	6.08	6.13	6.14	6.11
. Non-constr.	2.07	2.99	2.83	2.98	3.33	3.58	3.84	4.24	4.72	5.29	6.01	6.41	6.48	6.41	6.29	6.15	6.01	5.87	5.73
Investment	0.16	0.07	-0.19	-0.27	-0.22	-0.17	-0.08	0.12	0.44	0.91	1.48	1.95	2.26	2.46	2.59	2.70	2.78	2.84	2.89
Exports	-0.27	-0.58	-0.83	-0.55	-0.35	-0.19	0.02	0.28	0.56	1.10	1.44	1.60	1.66	1.66	1.65	1.63	1.62	1.60	1.58
Imports	1.74	3.38	6.05	4.46	4.05	4.39	4.58	3.97	3.40	2.06	-0.38	-0.74	-0.70	-0.66	-0.61	-0.58	-0.55	-0.53	-0.52
Real.wages	0.17	0.53	0.47	1.00	1.24	1.49	1.85	2.32	2.66	2.99	3.43	3.46	3.50	3.53	3.52	3.48	3.42	3.35	3.29
Patents	0.25	0.99	1.85	2.73	3.62	4.42	5.05	5.49	5.73	5.84	5.95	6.11	6.27	6.42	6.54	6.63	6.70	6.74	6.77
Price.level.GDP	0.67	1.45	2.27	1.70	1.40	1.31	1.08	0.52	-0.11	-1.02	-2.16	-2.51	-2.59	-2.61	-2.60	-2.58	-2.56	-2.54	-2.52
Consumer.price.level	0.47	1.00	1.56	1.21	1.03	0.97	0.82	0.45	0.02	-0.62	-1.41	-1.67	-1.73	-1.75	-1.75	-1.75	-1.74	-1.73	-1.72
terms of trade	0.40	1.09	1.52	1.37	1.09	0.88	0.61	0.16	-0.42	-1.16	-1.88	-2.28	-2.43	-2.46	-2.45	-2.42	-2.39	-2.36	-2.32
Dollar exch.rate	-0.09	-0.08	-0.04	0.02	0.09	0.16	0.22	0.29	0.34	0.39	0.40	0.37	0.36	0.34	0.33	0.31	0.29	0.28	0.26
Euro.exch.rate	-0.01	-0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.02	0.07	0.14	0.13	0.15	0.14	0.11	0.07	0.02	-0.05	-0.14	-0.14	-0.13	-0.13	-0.13	-0.13	-0.12	-0.12	-0.12
Inflation	0.98	0.77	0.44	-0.68	-0.17	-0.10	-0.33	-0.60	-0.69	-1.04	-0.98	-0.17	-0.05	0.00	0.01	0.02	0.02	0.02	0.02
Gov Debt %GDP	-0.29	-0.74	-1.57	-1.73	-1.85	-2.09	-2.42	-2.67	-2.93	-3.09	-2.90	-2.88	-2.93	-2.97	-2.96	-2.90	-2.78	-2.62	-2.41
gov balance %GDP	0.30	0.39	0.61	0.22	0.18	0.28	0.36	0.34	0.37	0.29	0.06	0.12	0.16	0.13	0.09	0.03	-0.03	-0.08	-0.12
Coh %GDP	0.52	0.72	4.06	2.02	2.15	2.87	3.51	3.27	3.39	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.52	0.72	4.06	2.02	2.15	2.87	3.51	3.27	3.39	2.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-1.06	-1.89	-3.47	-2.38	-2.17	-2.41	-2.56	-2.29	-2.11	-1.38	-0.06	0.02	-0.07	-0.12	-0.15	-0.16	-0.17	-0.17	-0.17

Note: percentage (points) difference from baseline

Table 11: LV

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.37	0.30	0.93	0.92	1.21	2.02	3.01	3.52	4.01	5.05	4.46	4.90	5.03	5.04	5.01	4.95	4.89	4.82	4.75
Employment	0.25	0.28	0.42	0.11	-0.02	0.26	0.48	0.29	0.18	0.27	-0.29	-0.13	0.08	0.19	0.23	0.25	0.26	0.27	0.28
. Low skilled	0.31	0.50	0.69	0.40	0.28	0.59	0.83	0.60	0.36	0.26	-0.42	-0.34	-0.06	0.16	0.30	0.39	0.43	0.46	0.48
. Medium skilled	0.22	0.24	0.38	0.07	-0.06	0.21	0.43	0.26	0.17	0.28	-0.26	-0.10	0.10	0.20	0.23	0.24	0.25	0.25	0.26
. High skilled	0.52	0.44	0.44	0.07	0.00	0.28	0.40	0.10	-0.02	0.14	-0.43	-0.13	0.08	0.11	0.11	0.10	0.11	0.11	0.12
Consumption	2.25	3.49	3.77	3.95	4.28	4.70	5.17	5.75	6.39	7.01	7.53	7.92	8.06	8.06	7.99	7.89	7.76	7.63	7.48
. Liq. Constr.	0.61	1.34	2.06	2.40	2.81	3.56	4.40	4.91	5.29	5.74	5.59	5.81	6.12	6.39	6.56	6.67	6.71	6.71	6.68
. Non-constr.	2.89	4.33	4.43	4.56	4.85	5.14	5.47	6.07	6.82	7.50	8.28	8.74	8.81	8.71	8.54	8.36	8.17	7.98	7.8
Investment	0.07	-0.03	-0.21	-0.32	-0.34	-0.33	-0.23	0.01	0.40	0.88	1.43	1.91	2.26	2.51	2.70	2.85	2.97	3.08	3.17
Exports	-0.34	-0.63	-0.67	-0.66	-0.50	-0.37	-0.12	0.36	0.89	1.35	1.80	1.99	2.02	2.01	1.99	1.97	1.94	1.92	1.89
Imports	1.67	3.08	4.50	4.24	4.03	4.69	5.07	3.90	2.49	1.89	-0.65	-0.98	-0.86	-0.74	-0.64	-0.57	-0.52	-0.48	-0.46
Real.wages	0.23	0.62	0.77	1.13	1.49	1.81	2.22	2.80	3.26	3.48	3.97	4.01	4.03	4.06	4.06	4.02	3.96	3.89	3.83
Patents	0.39	1.54	3.02	4.55	6.04	7.35	8.28	8.76	8.84	8.60	8.24	7.93	7.71	7.55	7.42	7.31	7.21	7.12	7.04
Price.level.GDP	0.60	1.26	1.75	1.59	1.37	1.30	0.99	0.12	-0.82	-1.62	-2.79	-3.17	-3.24	-3.23	-3.20	-3.17	-3.13	-3.1	-3.07
Consumer.price.level	0.43	0.92	1.28	1.19	1.04	0.98	0.76	0.16	-0.50	-1.09	-1.94	-2.24	-2.30	-2.30	-2.29	-2.27	-2.25	-2.23	-2.21
terms of trade	0.33	0.82	1.10	1.10	0.96	0.80	0.47	-0.15	-0.89	-1.59	-2.26	-2.64	-2.77	-2.78	-2.75	-2.71	-2.67	-2.63	-2.59
Dollar exch.rate	-0.09	-0.08	-0.04	0.02	0.09	0.16	0.22	0.29	0.34	0.39	0.40	0.37	0.35	0.34	0.32	0.31	0.29	0.28	0.26
Euro.exch.rate	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0	-0
Nom int rate	0.02	0.08	0.15	0.18	0.19	0.18	0.15	0.09	0.02	-0.04	-0.15	-0.15	-0.16	-0.16	-0.16	-0.16	-0.15	-0.15	-0.15
Inflation	0.89	0.57	0.29	-0.27	-0.17	-0.09	-0.49	-0.96	-0.88	-0.92	-1.05	-0.18	-0.02	0.02	0.03	0.04	0.03	0.03	0.03
Gov Debt %GDP	-0.25	-0.70	-1.22	-1.55	-1.76	-2.09	-2.52	-2.83	-3.01	-3.24	-3.19	-3.15	-3.19	-3.22	-3.20	-3.12	-2.99	-2.81	-2.59
gov balance %GDP	0.31	0.41	0.48	0.32	0.26	0.38	0.48	0.38	0.31	0.35	0.08	0.12	0.16	0.13	0.08	0.02	-0.04	-0.09	-0.14
Coh %GDP	0.47	0.67	2.30	2.06	2.09	3.30	4.42	3.72	2.77	3.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh %GDP	0.47	0.67	2.30	2.06	2.09	3.30	4.42	3.72	2.77	3.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
Trade bal %GDP	-1.08	-1.86	-2.59	-2.42	-2.27	-2.69	-2.96	-2.32	-1.58	-1.35	0.09	0.18	0.04	-0.05	-0.11	-0.14	-0.17	-0.18	-0.19

Note: percentage (points) difference from baseline

Table 12: MT

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.01	0.02	0.10	0.29	0.55	0.93	1.38	1.47	1.55	1.55	1.42	1.46	1.44	1.41	1.37	1.34	1.30	1.27	1.24
Employment	0.03	-0.01	-0.03	0.03	0.12	0.27	0.35	0.09	-0.14	-0.32	-0.45	-0.36	-0.27	-0.22	-0.18	-0.15	-0.12	-0.10	-0.08
. Low skilled	0.02	-0.02	-0.03	0.04	0.15	0.32	0.39	0.12	-0.16	-0.39	-0.54	-0.46	-0.37	-0.30	-0.24	-0.19	-0.16	-0.12	-0.10
. Medium skilled	0.03	-0.01	-0.04	-0.02	0.03	0.17	0.27	0.06	-0.10	-0.20	-0.28	-0.17	-0.10	-0.07	-0.06	-0.06	-0.05	-0.04	-0.04
. High skilled	0.31	0.30	0.21	0.21	0.23	0.26	0.20	-0.13	-0.27	-0.30	-0.27	-0.10	-0.04	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02
Consumption	-0.09	-0.13	-0.12	-0.07	0.00	0.11	0.23	0.33	0.45	0.57	0.65	0.70	0.71	0.71	0.70	0.69	0.67	0.66	0.64
. Liq. Constr.	0.09	0.16	0.22	0.37	0.58	0.86	1.10	0.94	0.70	0.45	0.25	0.28	0.35	0.42	0.47	0.52	0.55	0.58	0.60
. Non-constr.	-0.14	-0.23	-0.23	-0.21	-0.18	-0.13	-0.05	0.14	0.38	0.61	0.78	0.84	0.83	0.80	0.77	0.74	0.71	0.68	0.66
Investment	-0.14	-0.30	-0.41	-0.50	-0.57	-0.62	-0.61	-0.49	-0.29	-0.07	0.13	0.25	0.32	0.35	0.36	0.37	0.37	0.38	0.38
Exports	-0.13	-0.18	-0.14	-0.11	-0.03	0.06	0.22	0.52	0.84	1.17	1.27	1.30	1.28	1.25	1.22	1.19	1.16	1.13	1.10
Imports	0.07	0.08	0.10	0.26	0.47	0.79	1.08	0.79	0.46	0.11	-0.20	-0.17	-0.14	-0.12	-0.10	-0.09	-0.08	-0.07	-0.07
Real.wages	0.05	0.16	0.29	0.42	0.56	0.69	0.83	1.11	1.33	1.49	1.58	1.55	1.50	1.44	1.38	1.32	1.26	1.21	1.16
Patents	0.28	1.16	2.38	3.70	4.90	5.78	6.16	6.03	5.53	4.87	4.24	3.72	3.31	3.00	2.77	2.59	2.46	2.37	2.29
Price.level.GDP	0.03	0.02	0.00	0.01	0.02	-0.01	-0.16	-0.59	-1.04	-1.40	-1.63	-1.65	-1.61	-1.56	-1.52	-1.48	-1.44	-1.40	-1.37
Consumer.price.level	-0.01	0.00	0.01	0.05	0.09	0.12	0.08	-0.10	-0.29	-0.45	-0.56	-0.58	-0.57	-0.56	-0.55	-0.53	-0.52	-0.52	-0.51
terms of trade	0.05	0.04	-0.01	-0.08	-0.17	-0.30	-0.54	-0.94	-1.38	-1.73	-1.94	-2.00	-1.97	-1.92	-1.86	-1.81	-1.75	-1.70	-1.65
Dollar exch.rate	-0.07	-0.07	-0.04	0.02	0.09	0.15	0.22	0.28	0.34	0.38	0.39	0.37	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.00	0.03	0.06	0.08	0.08	0.08	0.08	0.07	0.05	0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Inflation	0.03	-0.02	-0.01	0.01	-0.01	-0.05	-0.24	-0.47	-0.42	-0.32	-0.17	0.02	0.04	0.05	0.05	0.04	0.04	0.03	0.03
Gov Debt %GDP	-0.03	-0.05	-0.08	-0.22	-0.44	-0.78	-1.14	-1.02	-0.79	-0.53	-0.27	-0.31	-0.38	-0.45	-0.49	-0.52	-0.53	-0.53	-0.52
gov balance %GDP	0.03	0.01	-0.01	0.02	0.08	0.16	0.21	0.10	0.04	0.00	0.00	0.06	0.07	0.07	0.05	0.04	0.02	0.01	0.00
Coh %GDP	0.34	0.50	0.62	1.01	1.46	2.16	2.84	2.21	1.53	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.34	0.50	0.62	1.01	1.46	2.16	2.84	2.21	1.53	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.15	-0.21	-0.25	-0.44	-0.65	-1.01	-1.37	-1.19	-0.99	-0.68	-0.50	-0.55	-0.57	-0.57	-0.56	-0.54	-0.53	-0.51	-0.49

Note: percentage (points) difference from baseline

Table 13: PL

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	-0.02	0.09	0.66	0.72	1.18	1.72	2.40	2.88	3.34	4.31	3.67	3.94	4.03	4.09	4.14	4.19	4.23	4.26	4.28
Employment	0.04	0.18	0.56	0.50	0.71	1.03	1.37	1.49	1.67	2.03	1.23	1.26	1.42	1.55	1.66	1.76	1.85	1.92	1.98
. Low skilled	0.18	0.55	1.15	1.35	1.79	2.34	2.88	3.16	3.43	3.72	2.95	2.92	3.09	3.31	3.54	3.76	3.96	4.14	4.28
. Medium skilled	0.01	0.13	0.50	0.43	0.62	0.93	1.26	1.38	1.56	1.93	1.12	1.16	1.31	1.43	1.53	1.62	1.70	1.77	1.82
. High skilled	0.19	0.26	0.46	0.20	0.25	0.40	0.55	0.48	0.53	0.88	0.07	0.24	0.42	0.50	0.54	0.57	0.59	0.62	0.64
Consumption	1.32	1.99	2.16	2.36	2.66	3.00	3.42	3.95	4.50	5.05	5.60	5.98	6.09	6.14	6.18	6.21	6.23	6.24	6.24
. Liq. Constr.	0.40	0.81	1.34	1.60	2.08	2.64	3.28	3.82	4.38	5.13	5.07	5.48	5.81	6.09	6.32	6.52	6.69	6.82	6.92
. Non-constr.	1.59	2.35	2.41	2.59	2.83	3.10	3.47	3.98	4.54	5.03	5.76	6.12	6.17	6.16	6.14	6.12	6.10	6.07	6.04
Investment	-0.11	-0.36	-0.57	-0.63	-0.57	-0.43	-0.17	0.24	0.73	1.28	1.90	2.33	2.57	2.74	2.87	2.99	3.09	3.19	3.28
Exports	-0.64	-0.82	-0.84	-0.70	-0.60	-0.45	-0.22	0.12	0.43	0.76	1.13	1.20	1.23	1.26	1.28	1.31	1.33	1.34	1.36
Imports	3.32	4.73	5.70	5.13	5.15	5.13	4.83	3.80	2.86	2.43	-0.37	-0.52	-0.43	-0.44	-0.49	-0.54	-0.58	-0.62	-0.65
Real.wages	0.06	0.13	0.10	0.37	0.54	0.72	0.93	1.26	1.53	1.60	2.18	2.20	2.12	2.05	1.98	1.91	1.86	1.81	1.77
Patents	0.23	0.95	1.86	2.80	3.70	4.47	5.06	5.45	5.64	5.64	5.57	5.50	5.44	5.40	5.38	5.37	5.38	5.39	5.41
Price.level.GDP	0.31	0.87	1.57	1.95	2.44	2.92	3.28	3.34	3.26	3.11	2.10	1.59	1.20	0.80	0.41	0.03	-0.33	-0.68	-1.01
Consumer.price.level	0.03	0.51	1.17	1.62	2.14	2.67	3.11	3.30	3.33	3.28	2.49	2.00	1.60	1.21	0.83	0.46	0.10	-0.25	-0.58
terms of trade	1.31	1.66	1.73	1.53	1.36	1.09	0.66	0.11	-0.43	-1.05	-1.68	-1.83	-1.88	-1.93	-1.97	-2.01	-2.04	-2.07	-2.09
Dollar exch.rate	-1.11	-0.94	-0.46	0.20	0.85	1.57	2.34	3.05	3.58	4.00	4.10	3.70	3.31	2.94	2.59	2.24	1.91	1.58	1.26
Euro.exch.rate	-1.03	-0.87	-0.42	0.19	0.76	1.41	2.11	2.76	3.23	3.61	3.69	3.32	2.94	2.59	2.25	1.93	1.61	1.30	1.00
Nom int rate	0.04	0.42	0.75	0.72	0.79	0.85	0.83	0.63	0.43	0.31	-0.39	-0.45	-0.42	-0.40	-0.39	-0.38	-0.37	-0.36	-0.35
Inflation	0.50	0.59	0.63	0.36	0.50	0.44	0.27	-0.02	-0.09	-0.37	-0.99	-0.40	-0.39	-0.39	-0.38	-0.37	-0.36	-0.34	-0.33
Gov Debt %GDP	-0.20	-0.65	-1.26	-1.42	-1.81	-2.28	-2.80	-3.18	-3.59	-4.26	-3.94	-4.23	-4.45	-4.56	-4.60	-4.56	-4.47	-4.33	-4.14
gov balance %GDP	0.20	0.12	0.06	0.01	0.06	0.12	0.21	0.30	0.42	0.51	0.49	0.55	0.47	0.39	0.31	0.25	0.18	0.13	0.08
Coh %GDP	0.44	0.61	1.63	1.34	1.72	2.11	2.48	2.20	1.89	2.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.44	0.61	1.63	1.34	1.72	2.11	2.48	2.20	1.89	2.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-1.04	-1.52	-1.87	-1.67	-1.70	-1.73	-1.68	-1.37	-1.10	-1.05	-0.08	-0.05	-0.10	-0.10	-0.09	-0.07	-0.06	-0.05	-0.04

Note: percentage (points) difference from baseline

Table 14: PO

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.22	0.20	0.42	0.78	0.99	1.14	1.35	1.78	2.03	2.51	2.10	2.31	2.37	2.38	2.37	2.35	2.32	2.29	2.26
Employment	0.20	0.23	0.32	0.37	0.23	0.04	-0.02	0.11	0.15	0.21	-0.19	-0.08	0.05	0.13	0.18	0.21	0.23	0.25	0.26
. Low skilled	0.18	0.25	0.34	0.39	0.25	0.07	0.01	0.12	0.16	0.20	-0.14	-0.06	0.06	0.15	0.20	0.24	0.27	0.29	0.30
. Medium skilled	0.20	0.17	0.26	0.36	0.19	-0.03	-0.09	0.09	0.15	0.24	-0.30	-0.14	0.02	0.09	0.12	0.14	0.15	0.17	0.17
. High skilled	0.38	0.32	0.29	0.27	0.10	-0.05	-0.05	0.09	0.07	0.13	-0.30	-0.08	0.06	0.08	0.09	0.09	0.10	0.10	0.11
Consumption	0.91	1.40	1.46	1.49	1.60	1.80	2.03	2.26	2.49	2.72	3.02	3.23	3.32	3.37	3.38	3.39	3.38	3.36	3.34
. Liq. Constr.	0.30	0.71	1.04	1.32	1.44	1.47	1.55	1.77	1.99	2.17	2.21	2.33	2.50	2.67	2.80	2.90	2.96	3.01	3.03
. Non-constr.	1.22	1.74	1.67	1.57	1.68	1.96	2.28	2.51	2.74	2.99	3.42	3.68	3.73	3.71	3.67	3.63	3.58	3.54	3.49
Investment	-0.01	-0.22	-0.50	-0.70	-0.71	-0.55	-0.31	-0.06	0.24	0.62	1.07	1.42	1.61	1.73	1.79	1.82	1.84	1.85	1.85
Exports	-0.31	-0.55	-0.70	-0.68	-0.52	-0.29	-0.09	0.09	0.29	0.55	0.84	0.93	0.93	0.92	0.91	0.89	0.87	0.86	0.84
Imports	1.26	2.32	3.21	3.69	3.22	2.34	1.71	1.62	1.22	0.93	-0.77	-0.93	-0.80	-0.69	-0.59	-0.50	-0.43	-0.36	-0.30
Real.wages	0.06	0.24	0.34	0.46	0.69	0.97	1.20	1.34	1.52	1.61	1.91	1.87	1.83	1.80	1.77	1.73	1.69	1.64	1.60
Patents	0.21	0.83	1.57	2.22	2.70	3.05	3.28	3.38	3.34	3.16	2.97	2.86	2.81	2.79	2.79	2.80	2.80	2.80	2.80
Price.level.GDP	0.40	0.80	1.14	1.27	1.05	0.69	0.41	0.27	0.03	-0.24	-0.88	-1.00	-1.00	-0.99	-0.97	-0.94	-0.92	-0.91	-0.89
Consumer.price.level	0.32	0.65	0.93	1.04	0.89	0.61	0.40	0.29	0.11	-0.11	-0.62	-0.73	-0.74	-0.73	-0.71	-0.70	-0.69	-0.67	-0.67
terms of trade	0.28	0.66	0.89	0.92	0.73	0.41	0.11	-0.14	-0.40	-0.71	-1.07	-1.26	-1.29	-1.28	-1.25	-1.21	-1.17	-1.14	-1.10
Dollar exch.rate	-0.08	-0.07	-0.04	0.02	0.09	0.15	0.22	0.28	0.34	0.38	0.39	0.37	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.01	0.03	0.06	0.08	0.08	0.08	0.07	0.07	0.05	0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Inflation	0.58	0.34	0.27	0.02	-0.29	-0.35	-0.23	-0.15	-0.25	-0.38	-0.55	-0.03	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Gov Debt %GDP	-0.35	-0.73	-1.12	-1.44	-1.41	-1.20	-1.09	-1.26	-1.36	-1.61	-1.15	-1.33	-1.54	-1.70	-1.80	-1.85	-1.84	-1.78	-1.69
gov balance %GDP	0.17	0.14	0.09	0.07	-0.01	-0.05	-0.01	0.10	0.16	0.21	0.15	0.22	0.22	0.19	0.14	0.09	0.04	0.00	-0.03
Coh %GDP	0.26	0.39	1.06	1.70	1.70	1.38	1.17	1.43	1.32	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.22	0.32	0.92	1.51	1.49	1.16	0.96	1.21	1.13	1.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.49	-0.85	-1.16	-1.31	-1.15	-0.84	-0.64	-0.63	-0.51	-0.42	0.20	0.22	0.17	0.12	0.09	0.07	0.04	0.03	0.01

Note: percentage (points) difference from baseline

Table 15: RO

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.29	0.32	0.63	0.86	1.10	1.32	1.53	1.95	2.27	2.73	2.37	2.49	2.48	2.44	2.40	2.35	2.30	2.26	2.21
Employment	0.22	0.12	0.11	0.05	0.01	-0.02	-0.01	0.15	0.24	0.28	-0.11	-0.10	-0.05	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01
. Low skilled	0.23	0.20	0.18	0.10	0.03	0.00	0.04	0.21	0.31	0.30	-0.10	-0.16	-0.13	-0.10	-0.08	-0.07	-0.06	-0.05	-0.05
. Medium skilled	0.21	0.10	0.09	0.04	0.00	-0.02	-0.02	0.14	0.23	0.29	-0.11	-0.08	-0.03	-0.01	0.00	0.00	0.00	0.00	0.00
. High skilled	0.30	0.08	0.07	0.02	0.01	-0.01	-0.03	0.08	0.10	0.20	-0.18	-0.06	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Consumption	0.93	1.43	1.63	1.83	2.05	2.27	2.49	2.73	2.99	3.26	3.48	3.59	3.57	3.52	3.45	3.37	3.30	3.22	3.14
. Liq. Constr.	0.61	0.94	1.18	1.35	1.52	1.72	1.98	2.37	2.70	2.90	2.71	2.69	2.72	2.73	2.72	2.69	2.65	2.59	2.53
. Non-constr.	1.11	1.70	1.89	2.10	2.35	2.58	2.77	2.93	3.15	3.46	3.91	4.09	4.05	3.96	3.86	3.76	3.66	3.57	3.48
Investment	-0.13	-0.30	-0.37	-0.32	-0.21	-0.07	0.08	0.27	0.53	0.89	1.29	1.55	1.69	1.77	1.81	1.84	1.86	1.87	1.88
Exports	-0.65	-0.70	-0.61	-0.44	-0.27	-0.13	0.00	0.10	0.30	0.64	0.84	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82
Imports	3.26	3.79	3.71	3.21	2.78	2.51	2.36	2.52	2.14	1.53	-0.10	-0.16	-0.04	0.02	0.05	0.07	0.08	0.09	0.10
Real.wages	0.09	0.39	0.56	0.76	0.95	1.15	1.38	1.59	1.83	1.94	2.14	2.08	2.04	2.01	1.97	1.93	1.89	1.85	1.82
Patents	0.23	0.88	1.68	2.46	3.17	3.76	4.21	4.48	4.55	4.47	4.32	4.19	4.06	3.95	3.84	3.75	3.66	3.58	3.50
Price.level.GDP	0.53	0.97	1.34	1.55	1.71	1.85	1.99	2.20	2.21	1.99	1.28	0.90	0.60	0.33	0.07	-0.16	-0.37	-0.56	-0.74
Consumer.price.level	0.23	0.67	1.07	1.35	1.57	1.76	1.94	2.17	2.25	2.13	1.56	1.18	0.87	0.59	0.33	0.09	-0.13	-0.33	-0.51
terms of trade	1.08	1.18	1.03	0.78	0.54	0.35	0.21	0.04	-0.28	-0.71	-1.05	-1.11	-1.10	-1.07	-1.04	-1.02	-0.99	-0.97	-0.95
Dollar exch.rate	-0.84	-0.50	-0.02	0.49	0.92	1.30	1.64	2.00	2.38	2.66	2.64	2.30	1.96	1.65	1.37	1.11	0.87	0.65	0.45
Euro.exch.rate	-0.77	-0.43	0.02	0.47	0.84	1.14	1.42	1.72	2.04	2.27	2.24	1.92	1.60	1.30	1.03	0.79	0.57	0.37	0.18
Nom int rate	0.24	0.46	0.55	0.49	0.41	0.36	0.34	0.38	0.29	0.10	-0.37	-0.42	-0.40	-0.37	-0.34	-0.32	-0.29	-0.27	-0.26
Inflation	0.74	0.36	0.33	0.18	0.14	0.13	0.17	0.17	-0.06	-0.37	-0.69	-0.31	-0.29	-0.26	-0.24	-0.22	-0.21	-0.19	-0.17
Gov Debt %GDP	-0.23	-0.46	-0.64	-0.75	-0.84	-0.91	-0.99	-1.14	-1.29	-1.45	-1.35	-1.28	-1.23	-1.17	-1.08	-0.97	-0.85	-0.72	-0.60
gov balance %GDP	0.24	0.11	0.09	0.06	0.05	0.05	0.06	0.13	0.15	0.19	0.02	0.05	0.04	0.01	-0.02	-0.04	-0.05	-0.06	-0.07
Coh %GDP	1.30	1.17	1.42	1.32	1.24	1.20	1.16	1.54	1.47	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	1.30	1.17	1.42	1.32	1.24	1.20	1.16	1.54	1.47	1.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-1.27	-1.48	-1.46	-1.28	-1.12	-1.01	-0.96	-1.06	-0.94	-0.71	-0.06	-0.03	-0.08	-0.10	-0.11	-0.11	-0.11	-0.11	-0.11

Note: percentage (points) difference from baseline

Table 16: SI

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.29	0.24	0.36	0.43	0.64	0.76	0.89	1.12	1.31	1.78	1.32	1.53	1.62	1.63	1.62	1.60	1.57	1.55	1.52
Employment	0.23	0.24	0.26	0.20	0.19	0.10	0.05	0.11	0.18	0.25	-0.24	-0.17	-0.04	0.02	0.04	0.05	0.06	0.06	0.07
. Low skilled	0.27	0.39	0.47	0.42	0.37	0.24	0.17	0.21	0.26	0.24	-0.27	-0.28	-0.16	-0.06	0.01	0.05	0.07	0.09	0.09
. Medium skilled	0.22	0.22	0.23	0.17	0.16	0.08	0.03	0.10	0.17	0.25	-0.23	-0.15	-0.03	0.03	0.05	0.06	0.06	0.06	0.06
. High skilled	0.23	0.14	0.12	0.07	0.09	0.02	-0.01	0.04	0.09	0.22	-0.25	-0.10	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Consumption	0.81	1.21	1.28	1.30	1.37	1.50	1.67	1.87	2.08	2.32	2.51	2.72	2.82	2.87	2.89	2.90	2.89	2.89	2.87
. Liq. Constr.	0.36	0.75	1.06	1.22	1.36	1.42	1.49	1.65	1.82	2.02	1.67	1.67	1.78	1.88	1.96	2.01	2.04	2.05	2.06
. Non-constr.	1.04	1.45	1.39	1.33	1.38	1.54	1.76	1.98	2.21	2.47	2.94	3.26	3.36	3.38	3.37	3.35	3.33	3.31	3.29
Investment	0.04	-0.09	-0.30	-0.49	-0.62	-0.65	-0.63	-0.55	-0.41	-0.19	0.14	0.42	0.59	0.69	0.75	0.80	0.83	0.85	0.88
Exports	0.20	0.20	0.22	0.24	0.34	0.47	0.58	0.61	0.62	0.78	0.57	0.66	0.71	0.71	0.70	0.69	0.68	0.66	0.65
Imports	0.83	1.58	2.18	2.29	2.28	1.95	1.66	1.65	1.59	1.69	0.22	0.04	0.11	0.18	0.25	0.30	0.35	0.39	0.43
Real.wages	0.03	0.19	0.23	0.31	0.39	0.54	0.69	0.82	0.95	0.99	1.31	1.29	1.28	1.29	1.29	1.27	1.25	1.22	1.20
Patents	0.03	0.10	0.18	0.24	0.29	0.33	0.37	0.40	0.43	0.46	0.50	0.58	0.66	0.75	0.82	0.90	0.96	1.02	1.08
Price.level.GDP	0.47	0.92	1.24	1.31	1.25	1.03	0.80	0.62	0.38	0.08	-0.69	-0.92	-0.95	-0.95	-0.94	-0.93	-0.92	-0.91	-0.90
Consumer.price.level	0.38	0.70	0.93	1.00	0.98	0.84	0.68	0.54	0.36	0.12	-0.44	-0.61	-0.64	-0.65	-0.65	-0.65	-0.65	-0.65	-0.64
terms of trade	0.12	0.47	0.68	0.74	0.66	0.50	0.33	0.18	0.02	-0.19	-0.50	-0.72	-0.80	-0.80	-0.79	-0.76	-0.73	-0.70	-0.67
Dollar exch.rate	-0.09	-0.07	-0.04	0.02	0.09	0.16	0.22	0.28	0.34	0.38	0.40	0.38	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.01	0.03	0.06	0.08	0.08	0.08	0.07	0.07	0.05	0.04	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Inflation	0.68	0.36	0.24	0.01	-0.11	-0.24	-0.22	-0.19	-0.24	-0.45	-0.70	-0.09	-0.02	0.00	0.01	0.01	0.01	0.01	0.01
Gov Debt %GDP	-0.25	-0.56	-0.83	-0.96	-1.05	-1.04	-1.00	-1.03	-1.08	-1.21	-0.90	-0.85	-0.89	-0.94	-0.97	-0.97	-0.95	-0.92	-0.86
gov balance %GDP	0.19	0.20	0.17	0.10	0.07	0.03	0.03	0.07	0.11	0.14	-0.03	0.03	0.07	0.07	0.06	0.04	0.01	-0.01	-0.02
Coh %GDP	0.26	0.38	0.92	1.11	1.33	1.15	0.98	1.16	1.21	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.26	0.38	0.92	1.11	1.33	1.15	0.98	1.16	1.21	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.36	-0.64	-0.90	-0.93	-0.90	-0.69	-0.53	-0.61	-0.67	-0.77	-0.10	-0.07	-0.15	-0.20	-0.24	-0.27	-0.29	-0.31	-0.33

Note: percentage (points) difference from baseline

Table 17: SK

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
GDP	0.17	0.36	0.57	0.86	1.13	1.53	1.99	2.55	3.08	3.55	3.25	3.53	3.61	3.63	3.62	3.59	3.56	3.53	3.49
Employment	0.18	0.30	0.36	0.40	0.37	0.40	0.48	0.59	0.64	0.52	0.10	0.28	0.48	0.60	0.68	0.73	0.78	0.81	0.84
. Low skilled	0.39	0.88	1.26	1.55	1.73	1.91	2.08	2.22	2.21	1.96	1.49	1.63	1.95	2.29	2.61	2.90	3.15	3.35	3.52
. Medium skilled	0.15	0.26	0.31	0.34	0.30	0.32	0.40	0.52	0.58	0.47	0.04	0.22	0.42	0.53	0.60	0.64	0.67	0.70	0.72
. High skilled	0.35	0.41	0.33	0.28	0.21	0.22	0.25	0.29	0.26	0.12	-0.24	0.02	0.20	0.26	0.27	0.28	0.30	0.31	0.32
Consumption	1.32	2.08	2.32	2.46	2.62	2.85	3.13	3.46	3.84	4.26	4.68	4.99	5.11	5.17	5.20	5.21	5.22	5.21	5.21
. Liq. Constr.	0.43	0.87	1.25	1.70	2.10	2.54	3.01	3.53	3.98	4.31	4.25	4.50	4.77	5.01	5.21	5.37	5.50	5.59	5.65
. Non-constr.	1.57	2.42	2.62	2.67	2.77	2.94	3.16	3.44	3.79	4.24	4.80	5.12	5.21	5.22	5.20	5.17	5.14	5.11	5.08
Investment	-0.01	-0.10	-0.20	-0.29	-0.32	-0.27	-0.14	0.09	0.42	0.87	1.37	1.75	1.98	2.12	2.21	2.27	2.32	2.35	2.37
Exports	-0.27	-0.33	-0.26	-0.26	-0.15	0.00	0.19	0.40	0.66	1.08	1.28	1.39	1.41	1.40	1.38	1.36	1.35	1.33	1.31
Imports	1.70	2.38	2.50	2.80	2.69	2.55	2.34	2.09	1.53	0.60	-1.11	-1.27	-1.16	-1.05	-0.96	-0.88	-0.80	-0.73	-0.67
Real.wages	0.09	0.27	0.45	0.63	0.88	1.15	1.43	1.71	2.00	2.28	2.65	2.63	2.58	2.53	2.48	2.42	2.35	2.29	2.22
Patents	0.22	0.90	1.81	2.77	3.68	4.47	5.08	5.43	5.52	5.39	5.17	4.97	4.82	4.71	4.62	4.54	4.48	4.43	4.39
Price.level.GDP	0.29	0.64	0.85	0.92	0.80	0.61	0.36	0.03	-0.44	-1.06	-1.81	-1.99	-2.01	-2.00	-1.98	-1.95	-1.93	-1.91	-1.89
Consumer.price.level	0.10	0.42	0.64	0.71	0.65	0.53	0.35	0.13	-0.20	-0.64	-1.18	-1.33	-1.34	-1.34	-1.33	-1.32	-1.31	-1.30	-1.29
terms of trade	0.55	0.64	0.59	0.60	0.47	0.25	-0.03	-0.39	-0.84	-1.38	-1.86	-2.11	-2.18	-2.17	-2.14	-2.11	-2.07	-2.03	-1.99
Dollar exch.rate	-0.47	-0.28	-0.04	0.02	0.09	0.16	0.22	0.28	0.34	0.39	0.40	0.37	0.36	0.34	0.33	0.31	0.30	0.28	0.26
Euro.exch.rate	-0.39	-0.20	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nom int rate	0.11	0.32	0.07	0.08	0.08	0.08	0.07	0.07	0.06	0.04	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Inflation	0.44	0.30	0.15	0.00	-0.15	-0.21	-0.28	-0.37	-0.51	-0.69	-0.62	-0.06	0.00	0.02	0.02	0.02	0.02	0.02	0.02
Gov Debt %GDP	-0.24	-0.65	-1.03	-1.44	-1.74	-2.04	-2.35	-2.68	-2.97	-3.16	-2.97	-3.08	-3.24	-3.36	-3.43	-3.44	-3.40	-3.31	-3.18
gov balance %GDP	0.22	0.24	0.31	0.33	0.30	0.31	0.33	0.37	0.37	0.33	0.19	0.24	0.25	0.22	0.17	0.12	0.07	0.02	-0.03
Coh %GDP	0.46	0.60	0.79	1.30	1.47	1.72	1.95	2.22	2.20	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coh % GDP	0.46	0.60	0.79	1.30	1.47	1.72	1.95	2.22	2.20	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade bal %GDP	-0.82	-1.19	-1.25	-1.41	-1.36	-1.31	-1.24	-1.18	-0.98	-0.51	0.29	0.30	0.21	0.14	0.10	0.06	0.03	0.00	-0.03

Note: percentage (points) difference from baseline