In Search of Growth in a Future with Diminished Expectations

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Abstract

The euro area has – in contrast to the US economy - still not recovered from the "Great recession" 2009 and the following euro crisis. Some fear that Europe could embark into a decade of "secular stagnation" like Japan in the recent past. The US success can be attributed to the application of the strategy of the "three arrows": a co-ordinated expansionary fiscal and monetary policy cum permanent structural reforms. In contrast, the euro area has its hands tied by a self-imposed restriction in fiscal policy (new fiscal rules). Thus, the euro area remains as a growth-stimulating strategy only an expansionary monetary policy by the ECB plus "structural reforms" at the member state level.

Austria – after the expiring of the hitherto "EU growth bonus" – has also to look for new strategies to stimulate growth by its own. In simulations with a macro-growth model for Austria alternative growth scenarios are analysed: structural reforms to improve efficiency in product und labour markets; investment in knowledge and innovation (R&D); more globalisation; traditional demand policies (monetary and fiscal). The most promising strategies are more globalisation and structural reforms plus R&D investments. Most of these strategies would stimulate growth without impairing fiscal sustainability.

Keywords: European Integration; Model simulations; country studies.
JEL Classification: F15; C51; O52.

Contents

1. Introduction

In the aftermath of the Great Recession 2009, caused by the global financial and economic crisis (GFC) Europe and in particular the EU and the euro are still struggling for a proper recovery from the crisis. Whereas the US economy in 2015 has already surpassed the level of pre-crisis (2007) real GDP by around 12 percentage points, real GDP in EU-28 (+2%) and the euro area (+0%) has hardly reached pre-crisis levels. The refugee crisis, starting in 2015 hits again only Europe.

It is too early to state that Europe or the euro area already has embarked into a decade of "secular stagnation" like Japan in the recent past as some doomsday experts are already painting on the wall (e.g. Summers, 2013, 2014). It is true that Europe has more troubles to get rid of the crisis than the United States. The signs of the crisis in the euro area are obvious: low growth and a dramatic increase in unemployment. Whereas the USA boost their economy by a coordinated expansionary fiscal cum monetary policy, the EU and the Euro area in particular follow – due to the new rules of EMU governance with the reformed SGP and Fiscal Compact with its "debt brakes" – a restricted policy stance[1]. Only ECB's monetary policy is expansionary. Hence, the only – budget-neutral - policy option which EU Member States can follow to stimulate growth in the medium to long run is to embark on a strategy of *structural reforms*. Anticipating the restrictions in policy options in Europe, several international organizations (EU[2], IMF[3] and OECD[4]) have developed scenarios on the potential growth impact of structural reforms of the labour and product markets already around the Great Recession 2009 and afterwards.

Austria as member of the EU and euro area fits into the picture of the gloomy medium-term outlook for growth. Until recently Austria has profited considerably from an "EU growth bonus" due to taking part in all steps of European integration. However, as the speed of further EU integration internally (consolidation of the projects of the Single Market and EMU) is fading and externally (no further enlargement) will came to a standstill in the years to come, the former growth bonus runs out. In order to evaluate the impact of alternative policy options (structural reforms) to stimulate economic growth a growth macroeconomic

[1] The only exception is Juncker's Investment Plan (see Juncker, 2014) with the newly installed European Fund for Strategic Investments (EFSI; see: http://www.eib.org/infocentre/press/releases/all/2015/2015-137-first-eib-lending-under-efsi-welcomed-by-europes-finance-ministers.htm?lang=en

[2] The experts of the European Commission made several simulations to evaluate the impact of structural reforms in EU's member states with the QUEST model (see Roeger et al., 2008; D'Auria et al., 2009, Varga et al., 2014; Varga and in't Veld, 2014A, 2014B); see also: Euro Area (2013).

[3] The IMF staff made simulations with the Global Monetary and Fiscal (GIMF) model (see Barkbu et al., 2012).

[4] The OECD staff used an econometric approach to evaluate structural reforms (see Bouis and Duval, 2011). Cacciatore et al. (2012) used a DSGE model.

model is developed. Several scenarios show that also non-Keynesian policies are able to improve Austria's growth potential.

2. Austria's "EU growth bonus" expires

Austria gained in all phases of EU integration. According to a recent ex post evaluation (see Breuss, 2014A) real GDP grew by 0.2% per year due to the opening-up of Eastern Europe (over the period 1989 to 2015), by 0.6% due to EU membership (over the period 1995-2015), by 0.5% due to participation in EMU (Euro) (over the period 1999-2015) and finally by 0.2% due to EU enlargements over the past decade (2004-2015). Overall, the participating in all integration steps since 1989 has cumulatively added about 1% to Austria's real GDP per year. However, as no further impulses from EU integration – internally (the new EMU economic governance has already been implemented) and externally (there are no new accessions planned in the period of Juncker's Commission, 2015-2020) – are to be expected and Eastern Europe is falling into a phase of crisis (Ukraine Russia conflict; political instability in some new EU members states) the "EU growth bonus" Austria was happy to consume in the last decades is definitely fading.

Austria – in convoy with the whole Euro area (an exception is Germany) – recovered very slowly from the Great Recession in 2009. Hence, Austria's economy is embarking into a "normal" economic status deriving its impulses to growth no longer from externally generated luck, but must generate them by its own smart economic policy[5].

3. Alternative policy options to stimulate growth

In view of the gloomy growth perspectives in the EU, the euro area and hence also in Austria a discussion about alternative growth drivers is necessary. As the traditional policy options – in particular fiscal policy – are exhausted, the key is structural reform. In order not to talk in this context only with a "buzzword", model simulations are a method to evaluate the growth impact of structural reforms. The reference for such models is the endogenous growth theory of Romer (1990), Jones (1995, 2005), Aghion and Howitt (1992, 1998, 2006, 2009), Acemoglu (1998, 2002, 2007) and Acemoglu and Autor (2011). These authors of the modern growth theory deal extensively with the question how to endogenize technical progress (total factor productivity, TFP).

The studies of the EU, the IMF and OECD primarily rely on a standard New-Keynesian type Dynamic Stochastic General Equilibrium (DSGE) model. Our ambition to evaluate the growth impact of structural reforms in Austria is somewhat more modest. Instead of a DSGE model with two sectors, like in Varga et al. (2014), we construct a simple macro growth

[5] For a more detailed description of the medium-term perspectives in Austria, see Breuss (2015A).

model for Austria's aggregate economy, which is able to capture some features of structural reforms. However, one should keep in mind that neither the sophisticated DSGE model approach nor the rather simple approach in our model is able to capture more subtle goals of modern growth aspects such as sustainable growth. Such more sophisticated questions are dealt with in EU's growth project WWWforEurope[6] - led by WIFO - in the context of EU's growth strategy "Europe 2020".

3.1 The model

Our macro growth model is based on the EU integration model by Breuss (2014A). Whereas the equations of that model are entirely econometrically estimated with data by the European Commission (AMECO data base) over the period 1960 to 2015, the present model approach is a mixture of estimated parameters and calibrated ones. The reason is that some features of structural reforms and market insufficiencies can only be captured with calibrated (assumed) parameter values according to growth theory. One could call our growth model a hybrid New Keynesian Growth (NKG) model which primarily focuses on the supply side of the economy. The present growth model is based on data for the period 1960 to 2025. The values up to 2016 are based on the forecast by the European Commission (2014 and AMECO database). In addition we made own forecasts for the baseline for the next decade (2017 to 2025; for more details, see Breuss, 2015A). The model is calibrated, estimated and simulated with EViews 8.0.

3.1.1 The supply side

The supply side of the macro growth model consists of a production function, the endogenous explanation of technical progress in the spirit of the semi-endogenous growth models of Jones (1995, 2005). Capital and labour demand and additional labour market as well as equations for the wage-price system conclude the supply side of the model.

The core of the macro growth model is a Cobb Douglas production function (equation (1)) with capital and labour as primary factors of production and technical progress (represented by TFP) as the main growth driver. Considering the features of endogenous growth theory TFP is endogenous. TFP depends on investment in R&D at home and abroad (via spillovers of imported technology) and on the development of labour productivity. The demand for capital is explained by the overall demand of the economy (GDP), by net exports as accelerator and also positively by an indicator of credit conditions. Capital demand reacts

[6] *WWWforEurope* stands for "Welfare, Wealth and Work" and tries to answer the question "What kind of new European growth and development strategy is necessary and feasible, enabling a socio-ecological transition to high levels of employment, well-being of its citizens, social inclusion, resilience of ecological systems and a significant contribution to the global common goods like climate stability" (see: http://www.foreurope.eu/).

negatively on user costs of capital (real interest rate, taxes, subsidies, cost of doing business) and on price mark-ups.

Cobb-Douglas production function

(1) $$Y = A\,K^{1-\alpha}\,E^{\alpha}\,.$$

Y is real GDP, *A* is Hicks-neutral "technological progress" measured by total factor productivity (TFP), *K* is real capital stock, *E* is total employment; the time index has been omitted in all variables. With the output elasticity of labour, $\alpha = 0.7$ the real GDP is calibrated as such that the times series of the actual data for A, K and E over the period 1960 to 2025 can reproduce real GDP (*Y*).

Endogenous technological progress

(2) $$A = A_{t-1}^{\beta}\,RD^{\gamma}\,(RD_{EU}^{\delta 1} * MS_{EU})\;(RD_{ROW}^{\delta 2} * MS_{ROW}\,)\,Q^{\varepsilon 1}\,Q_{t-1}^{\varepsilon 2}\,.$$

Technical progress (TFP) (*A*) is – which corresponds to the semi-endogenous growth theory of Jones (1995, 2005) and the empirical implementation by (Coe and Helpman, 1995; Coe et al., 2009) – endogenously determined by the level of TFP in the past and by the primarily publicly financed investment in R&D (*RD*) in Austria and spillovers from R&D activities abroad (in the EU and in the rest of the world (RD_{EU}, RD_{ROW})[7]. Labour productivity (*Q*) is part of total factor productivity and influences therefore positively change in technical progress.

The knowledge production function of technical progress is then calibrated to the actual data over the period 1960 to 2025 by using the following values for the respective elasticities: $\alpha = 0.7, \beta = 0.03, \gamma = 0.007, \delta 1 = 0.003, \delta 2 = 0.002, \varepsilon 1 = 0.30, . \varepsilon 2 = 0.10$. The spillover elasticity is higher for R&D activities in the EU (RD_{EU}) than in the rest of the world (RD_{ROW}). The R&D activities abroad are weighted by the respective import shares for the EU (MS_{EU}) and for the Rest of the World (MS_{ROW}).

[7] In a small open economy some part of domestic technological progress (TFP) results also from spillovers of foreign R&D, embodied in manufacturing imports (see Coe and Helpman, 1995; Coe et al, 2009). This impact increases with the degree of openness of a country. According to Coe and Helpman (1995, p. 871) the elasticity of TFP with respect of foreign R&D would be 0.1 for Austria in the year 1990 (for Germany 0.08; for the USA 0.0.3). Coe et al. (2009) extend their analysis of influences of TFP by including institutional variables. Countries where the ease of doing business (DB; this variable is included in the demand for capital in our analysis) and the quality of tertiary education systems are relatively high tend to benefit more from their own R&D efforts, from international R&D spillovers, and from human capital formation. Strong patent protection is associated with higher levels of total factor productivity, higher returns to domestic R&D, and larger international R&D spillovers. Finally – in an international comparison - the legal system plays also an important role in stimulating TFP.

Demand for capital

$$K = \frac{(1-\alpha)\, Y\ C^{\epsilon}\, (X/M)^{\theta}}{MC_p^{\vartheta}\left(i_r^{\mu}+t^{\pi}-s^{\rho}+DB^{\sigma}\right)} \quad . \tag{3}$$

The demand for capital stock is derived from the first order condition of the profit maximization problem. In our case the capital stock (*K*) depends positively on total production (real GDP, *Y*) and the volume of outstanding credit (C). Additionally an accelerator term is included which relates positively net-exports (X/M) to capital demand. Capital demand is negatively determined by the degree of price mark-up ($MC_p = (1 + mkp)$). Decreasing the mark-up will lead to higher output per capital because it directly affects the steady state level of capital (see Varga et al., 2014, p. 360). A reduction in mark-ups (more competition in the product markets) reduce domestic prices of goods and production factors and hence also increases capital demand. Other cost variables (the user costs of capital) decrease the demand for capital, such as the real interest rate (i_r), the difference between tax and subsidy shares in GDP (*t-s*) and additionally the cost of doing business, captured by the index "doing business" (*DB*) by the World Bank (2013)[8]. With the following values of the capital demand elasticities the data are calibrated as such that the equation can reproduce the actual data over the period 1960 to 2025: 1-$\alpha = 0.3$ is the output elasticity of capital in the Cobb Douglas production function. $\epsilon = 0.1$, $\theta = 0.05$, $\vartheta = 0.11$, $\mu = 0.01$ and $\pi = 0.7$, $\rho = 1.1$, $\sigma = 0.15$.

The price mark-up for Austria (*mkp*) is assumed to be 20%, therefore our mark-up factor (MC_p) is 1.20 in 2015. This corresponds also with the values given by Varga et al (2014, p. 338). Own estimations for Austria's industry (46 industries) resulted in mark-up ratios (price level over marginal costs) between 1.0 (textiles) and 4.5 (financial intermediation; see Badinger and Breuss, 2005).

Demand for labour

$$E = \frac{\alpha Y}{MC_w^{\tau}\ w_r^{\varphi}} \, . \tag{4}$$

The demand for total labour (*E*), derived from the first order condition of the profit maximization problem depends on total production (in real GDP, *Y*) and negatively on the wage mark-up ($MC_w = (1 + mkw)$) and the factor price, real wage (w_r). Wage mark-up is an indicator for the bargaining power of trade unions which is very strong in Austria. Therefore we assume a wage mark-up of 50%, hence MC_w is 1.50 until 2015. In contrast to the price

[8] In the ranking on the ease of „Doing business" (see World Bank, 2013), Austria stood at rank 30. One year later, Austria's rank was corrected to 21 (see World Bank, 2014).

mark-up (competition on the goods market) Austria's EU accession to the Single Market did not diminish the power of the trade unions and hence the wage mark-up remained constant. With the following parameter values the variables are calibrated to the actual data over the period 1960 to 2025: $\alpha = 0.7$ is again the output elasticity of labour in the Cobb Douglas production function. $\tau = 0.07$ and $\varphi = 0.8$.

The demand for dependent labour (E_d) is econometrically estimated by relating it to total employment (E) and to real GDP (Y).

Labour market

The labour market is closed by defining *labour supply* ($LS = E + U$), where U = total unemployment in 1.000 persons.

The phenomenon of *"secular stagnation"*, if the cause should be a long-term decline in population growth[9] – as postulated by Hansen (1938) – could also be analysed with our model as we have included population in the determination of unemployment and hence in the definition of labour supply. A secular decline in population would lead to a stagnation of labour supply and would via the price/wage determination (Philips curve) negatively influence the demand for capital and would lead to a depression or a stagnation in output[10].

The *unemployment rate* (u) is derived from Okun's law, i.e. its absolute change (Δu) depends negatively on the growth rate of real GDP ($\dot{Y}/Y$) plus total population.

Labour productivity (Q) is defined as real GDP relative to total employment: $Q = (Y/E)$.

Price and wage system

Domestic prices (P, the deflator of GDP) and its inflation rate is econometrically estimated by an equation which includes a price mark-up factor over unit labour costs (MC_p^{ϑ}), representing

[9] The recent refugee crisis in Europe leading to a massive influx of migrants from Syria et al causes budgetary costs in the short run but could – if some the majority of the migrants are integrated in the labour market – counteract the tendency of "secular stagnation".

[10] Roeger (2014) presenting DG ECFIN's medium-term growth projections to the year 2024 firstly shows that structural unemployment, productivity trends and investment have contributed to persistence of slow growth since the "Great Recession" of 2009. He then analyses the causes for the weak growth performance in DG ECFIN's medium term projections which bear the risk of "secular stagnation". The projections show that the decline in employment and productivity growth is not just a cyclical phenomenon. It is related to a slowdown in the growth rate of the working-age population, an increase in the non-accelerating wage rate of unemployment (NAWRU) and reduced trend total factor productivity (TFP) growth. However, the largest factor weighing on potential growth is low rates of capital formation. Apart from the slowdown in potential growth, deleveraging pressures are also exerting a negative effect on investment rates. However, using the QUEST model, Roeger (2014) cannot confirm that deleveraging will reduce growth permanently, as sometimes argued in the literature. An important reason for the protracted slowdown in euro area growth was the double-dip nature of the recession (2009 and 2012-2014), which saw the financial crisis followed by the sovereign debt crisis. The second recession, in particular, highlighted the absence of supranational financial assistance mechanism in the euro area as well the need to address powerful fragmentation forces in financial markets.

the degree of competition in the goods market plus the price spill-over from net imports and the influence of indirect taxes.

Wages per capita (W) and its chance is econometrically estimated with a Phillips curve approach. Wage inflation is determined by a wage mark-up factor (MC_w^τ) over domestic inflation, labour productivity (*Q*) and the inverse of the unemployment rate (*1/u*).

Unit labour costs are calculated as the sum of wages over GDP: *ULC* = (*(W*E)/Y*). Unit labour costs then determine international competitiveness, measured by the real exchange rate (REER).

3.1.2 The demand side

To close the macro growth model supply must be equal demand in equilibrium. That means

(5) $$C+I+X-M = Y=F(K,E).$$

Real Investment (I) is determined already by the capital demand equation (3). Econometrically Investment depends on the change of the capital stock and lagged Investment: $I = f(\Delta K, I_{-1})$. The demand for exports (*X*) and imports (*M*) is estimated later in the chapter on foreign trade. That means, that total real consumption (*C*) is the residual on the demand side of this model. For checking purposes real consumption (*C*) is also directly estimated by a simple Keynesian consumption function, depending on real disposable income (Y_d) and lagged consumption: $C = f(Y_d, C_{-1})$.

Welfare indicators

The growth model defines welfare with the indicator of real GDP per capita (Y_{pc}). Other welfare indicators could be the real disposable income (Y_d). The latter depends positively on real GDP (*Y*) and negatively on direct taxes (t_d) and is used in explaining real private consumption.

3.1.3 Foreign trade

The foreign trade is represented by equations for real exports (*X*) and real imports (*M*) of goods and services. Both equations are calibrated, using plausible assumptions on the incomes and price elasticities. Relative prices are measured by the index of the real effective exchange rate, *REER* (source: AMECO database) for Austria relative to 37 industrial countries:

The *real effective exchange rate* is econometrically estimated by the following equation:

(6) $$REER = F(ULC, USD€).$$

REER depends on Austria's unit labour costs (*ULC*) and the US-Dollar to Euro exchange rate (*USD€*). That means that two variable determine Austria's international price competitiveness, a domestic source and the Euro exchange rate.

Exports of goods and services are determined by a calibrated equation. Real exports (*X*) depend on foreign demand, split into GDP of EU-28 (Y_{EU}) multiplied with Austria's EU-28 export share (XS_{EU}) plus GDP for the rest of the world (Y_{ROW}) multiplied with the respective export share (XS_{ROW}). Exports react negatively on relative prices, captured by the real effective exchange rate (*REER*) for 37 industrial countries, taken from European Commission's AMECO data base. An "EU integration" term (INT) should capture further activities of the EU to foster export growth, either by further enlarging the EU or by external impulses like the conclusion of TTIP.

(7) $$X = \frac{[Y_{EU} * XS_{EU} + Y_{ROW} * XS_{ROW}]^{\psi}}{REER^{\omega}} * e^{INT} .$$

The income demand elasticity is set at $\psi = 2.0$, the relative price elasticity at $\omega = 0.5$; the EU integration term (*INT*) is a dummy variable.

Imports of goods and services are also determined by a calibrated equation, using the same elasticities as in the export equation. Real imports (*M*) depend on domestic demand (real GDP, *Y*) and relative prices, captured by *REER* and are also determined by the same term for "EU integration" as used in the export equation.

(8) $$M = Y^{\psi}\, REER^{\omega} * e^{INT} .$$

The *current account balance* is defined as the difference of exports of goods and services with that of imports of goods and services, in nominal terms.

3.1.4 Monetary and fiscal policy

Two kinds of macro policy are modelled, monetary and fiscal policy. For Austria as a member state of the euro area, short-term interest rates are determined by the ECB.

Monetary policy is modelled via the following Taylor-rule, which allows for some smoothness of the (short-term) interest rate response ($i^{€}$) to the inflation and output gap (in our case GDP growth rates). It is assumed that the ECB sets its target interest rate as follows:

(9) $$i^{€} = r_{€}^{e} + \pi_{€} + \omega_{inf}\,(\pi_{€} - \pi_{TAR}) + \omega_{GDP}\,(y_{€} - y_{TAR}) + \beta_{ilag} i_{-1}^{€},$$

where $r_{€}^{e}$ is the equilibrium real interest rate, $\pi_{€}$ is the inflation rate in the euro area with π_{TAR} its target rate (2%); $y_{€}$ and y_{TAR} are the growth rates of real GDP and its long-run target value (we assume 1.5%). The parameters ω_{inf} (0.51), ω_{GDP} (0.45) and the parameter for the lagged interest rate, β_{ilag} (0.77) are econometrically estimated. $r_{€}^{e} + \pi_{€} = 0.52$.

In the policy simulations, however, we take the ECB short-term interest rate as exogenous given. Then the Austrian short-term interest rates (i_s^{AT}) depends then on the interest rate set by the ECB for the euro area ($i^{€}$) plus a term for the domestic inflation rate ($P\%^{AT}$):

(10) $$i_s^{AT} = \xi\, i^{€} + \phi P\%^{AT},$$

with ξ = 1.0 and $\phi = 0.5$. This translates to the long-term interest rate (*i*) which enters as a cost factor into the capital demand equation (3).

Fiscal policy is represented by the *budget balance* (*B*) or net-lending, as the difference of government revenues (taxes, *TX*) over expenditure (*EX*). On the expenditure side we distinguish between government subsidies (*S*), expenditures on R&D (*RD*) and other expenditures (consisting of government consumption, government investment and transfers). Government revenues (*TX*) are made up of direct taxes (on capital and labour), indirect taxes (taxes on consumption, value added taxes), and the rest of government revenues. Both tax categories are explained by nominal GDP.

The dynamics (change) of the *public debt* to GDP ratio (ΔD) is calculated with the public debt dynamics equation

(11) $$\Delta D_t = PD_t + (i - \left(\dot{Y}n/Yn\right) D_{t-1} + SF_T,$$

where *PD* is the primary budget deficit in % of GDP (net-lending minus interest payments on the public debt), *i* is the long-run nominal interest rate, *Yn* is nominal GDP, and *SF* is the stock-flow adjustment in % of GDP.

3.2 Growth scenarios

Our hybrid macro growth model is able to reproduce the actual data over the period 1960 to 2025. As our model is based on the ideas of the modern, endogenous growth theory it should also be able to answer the question, which policy change can lead to more growth. The modern growth theory has taught us that shocks to the model do not permanently increase economic growth, but it only increases the level of real GDP to a new steady state. This has to be kept in mind, when analysing the following simulation results.

Varga et al. (2014) concentrate their analysis on the growth impact of some aspects of "structural reforms" in the four southern countries of the Euro area (Greece, Italy, Spain and Portugal), first, on the *goods or product market* (reducing price mark-ups; reducing firm's entry costs), second, on the *labour market* (tax shift from labour to consumption) and finally some aspects of *knowledge & innovation* (R&D subsidy; decreasing the share of low-skilled workers; increasing the share of high-skilled workers). Varga and in 't Veld (2014A, 2014B) make the same exercise for all 28 EU Member States.

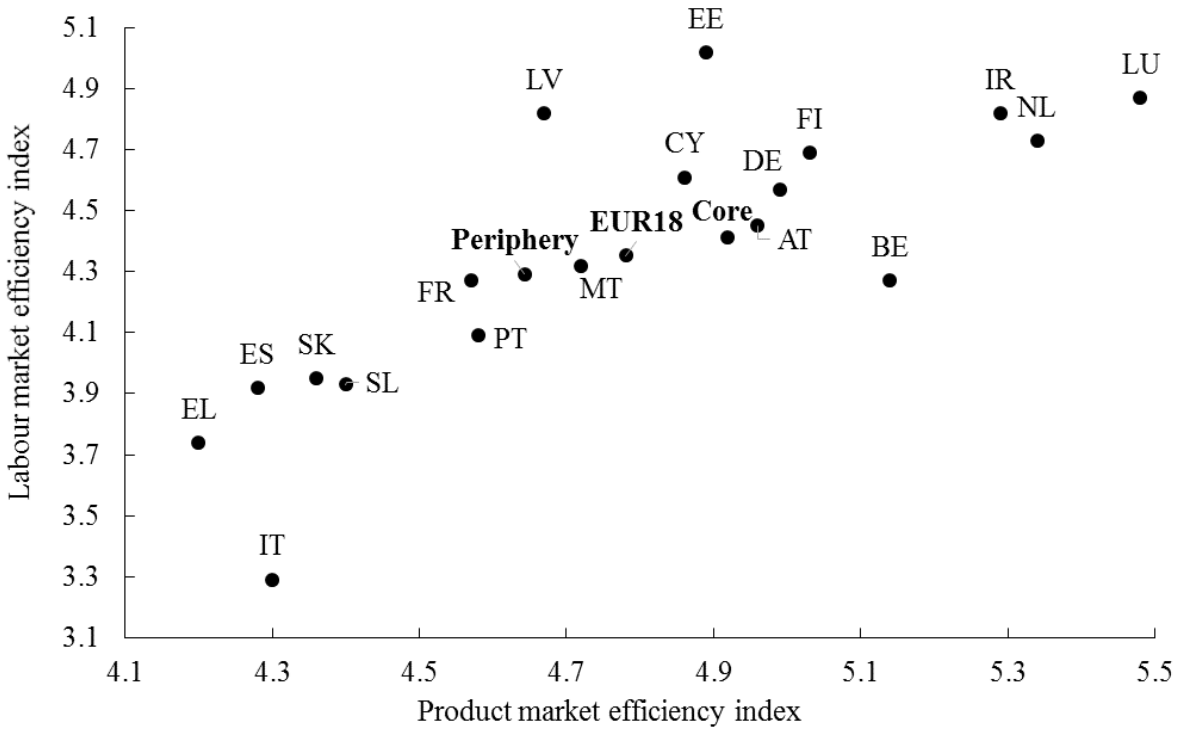
In contrast, we try to broaden the analysis of possible sources of growth, first by looking at the growth impact of some aspects of "structural reforms". Then we analyse the possible growth effect of a reorientation of Austria's foreign trade from traditional EU markets to the more dynamic non-EU markets (increased participation in the globalisation). Finally we

analyse how our model behaves in the field of traditional demand policy areas, in monetary and fiscal policy.

3.2.1 Structural reforms

The first exercise to find growth for Austria without impeding the fiscal stance is the simulation of some structural reform measures on the product and labour market.

Figure 1: Product market and labour market efficiency in the Euro area
(WEF-Index 2014/15)



Periphery = Cyprus, Estonia, Greece, Ireland, Italy, Latvia, Malta, Portugal, Spain; **Core** = Austria, Belgium, Finland, France, Germany, Luxembourg, Netherlands, Slovak Republic, Slovenia.
Source: World Economic Forum (2014): WEF-Index: 1 = min, 7 = max.

The World Economic Forum (2014) measures regularly goods (or product) market and labour market efficiency in a sub-index[11] of its Global Competitiveness Index (GCI). Accordingly, the euro area countries show a clear north-south divide (see Figure 1). Whereas most of the periphery countries in the south are inefficient in both category, the northern countries (the core) have already reached a high level of market efficiency. Interestingly, the index values did not change very much since 2008. However, the GFC 2008/09 brought some standstill in

[11] The sub-index *„goods market efficiency"* is calculated by evaluating several indicators (Number of procedures to start a business; number of days to start a business; agricultural policy costs; prevalence of trade barriers; trade tariffs (% duty); prevalence of foreign ownership; business impact of rules on FDI; burden of customs procedures; imports as % of GDP; degree of customer orientation; buyer sophistication); *"labour market efficiency"* is evaluated with a series of indicators (Cooperation in labour-employer relations; flexibility of wage determination; hiring and firing practices; redundancy costs, weeks of salary; effect of taxation on incentives to work; pay and productivity; reliance on professional management; country capacity to retain talent; country capacity to attract talent; women in labour force (ratio to men)).

the core, but efficiency had to be improved in the periphery under the pressure of the conditions dictated by the Troika in the context of the rescue programmes.
Austria belongs to one of the best performers. Nevertheless, there is always room for improvement. The possible impact of further improvements are simulated with our growth model.

Product market reforms:

1) Market competition

Structural reforms need time. Therefore, all measures to reform the goods and labour market as well as the improvement in R&D investment are implemented into the model gradually over a period of ten years[12].

Table 1: GDP, employment and budgetary effects of structural reforms

Policy impulse	Size		GDP, real (cum. % deviation from baseline)			Employment (cum. % deviation from baseline)			Public debt (% GDP deviation)		
			2016	**2017**	**2025**	**2016**	**2017**	**2025**	**2016**	**2017**	**2025**
Product market											
Reducing price mark-up	-10.0	pp.	0.3	0.5	1.2	0.2	0.3	0.3	-1.8	-2.2	-5.8
Doing business	10.0	pp.	0.2	0.3	1.0	0.2	0.3	0.5	-1.7	-2.0	-5.5
Labour market											
Labour productivity	1.0	pp.	0.1	0.2	1.1	0.0	0.1	0.0	-1.5	-1.9	-6.2
Reducing wage mark-up	-10.0	pp.	0.2	0.3	0.9	0.2	0.3	1.1	-1.7	-2.0	-5.6
Knowlege and innovation											
R&D investment	1.0	%GDP	0.2	0.4	1.0	0.2	0.3	0.4	-1.7	-1.8	-0.6
Total			0.9	1.7	5.2	0.8	1.3	2.3	-8.5	-10.0	-23.8

The structural reform measures are implemented gradually over a period of ten years to reach in 2025 the numbers indicated in the column "Size".
Source: Simulation with the Austrian macro growth model

As it is standard in general equilibrium models we simulate in our macro growth model for Austria an improvement in market competition by a negative price mark-up shock. With Austria's accession to the EU in 1995 the participation in EU's Single Market increased the competitive pressure in the Austrian economy leading to a decline in price mark-ups (see Breuss, 2014A). In our model the mark-up factor came down from 1.5 in 1994 to 1.4 in 1995

[12] Eggertsson et al. (2014) question whether in a crisis that pushes the nominal interest rate to its lower bound (zero lower bond, ZLB) – like the ECB did – structural reforms may support economic activity in the short run, or whether they might well be contractionary. Economists at the European Commission (see Vogel, 2014) veto against the Eggertsson result. They agree with the theoretical possibility that the short-term output effects of reforms can be negative because in a macroeconomic environment in which the zero bound on monetary policy rates is temporarily binding. However, negative effects are small in a model environment such as QUEST that incorporates a larger number of transmission channels. Simulations with our model can replicate the Eggertson results, but the differences between a scenarios with flexible and fixed interest rates are small in case of structural reforms (see Breuss, 2015A, Box 1).

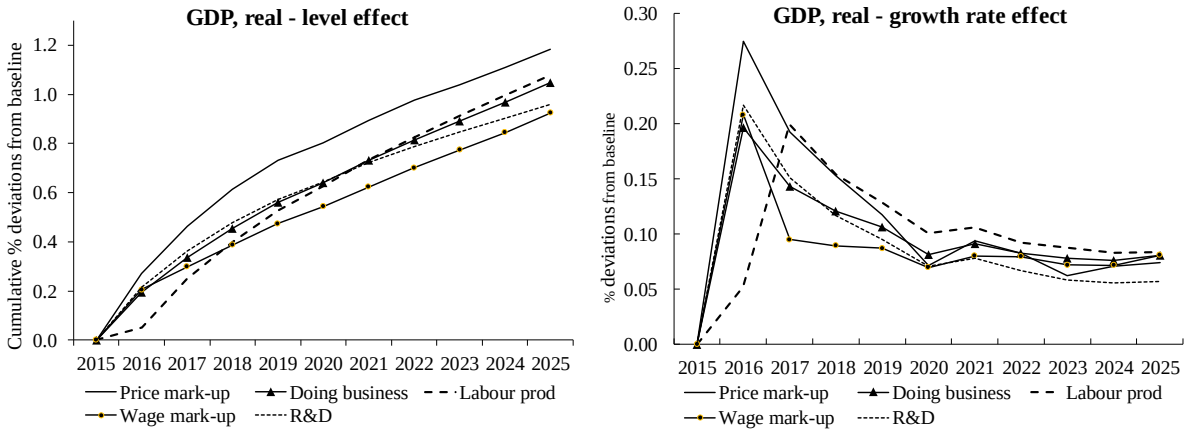
and further because of the additional competitive pressure in the EMU in 1999 (1.3). The grand EU enlargement, starting in 2004 led - via an enlargement of the Single Market - to a further decline in the mark-up to 1.2.

In the following simulation it is assumed that the price mark-up, due to national reform policy measures to improve market competition declines gradually by 1% per year to reach 1.08 in the year 2025.

As a result of reducing the price mark-up the level of real GDP could be increased by 0.3 percentage points in the short-run and would gradually increase to 1% in 2025 (see Table 1 and left part of Figure 2). As already mentioned, in a growth model a permanent shock does lead to a permanent increase of the output level, but not to a permanent increase of the output growth rate. Therefore, the price mark-up shock starting in 2016 leads to a short-term jump in the real GDP growth rate of 0.3% and then adjusts to the steady state growth rate (which is equivalent with the baseline growth rate scenario to 2025; right part of Figure 2).

More competition in Austria's product market would not only stimulate output but also employment (see Table 1 and Figure 3). The number of total employment could be increased by 0.3%. As a consequence of more output and employment, the unemployment rate could go down by 0.1%.

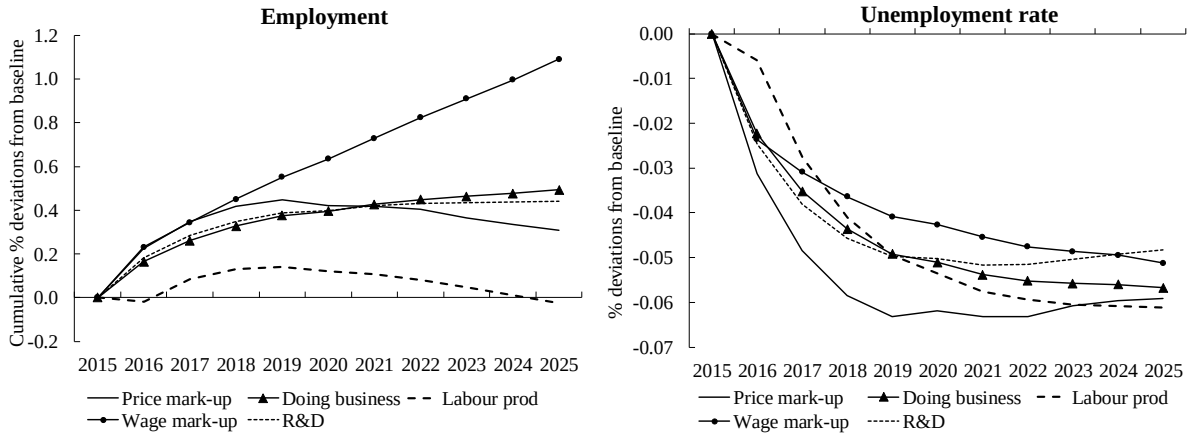
Figure 2: GDP effects of structural reforms



Source: Simulation with the Austrian macro growth model

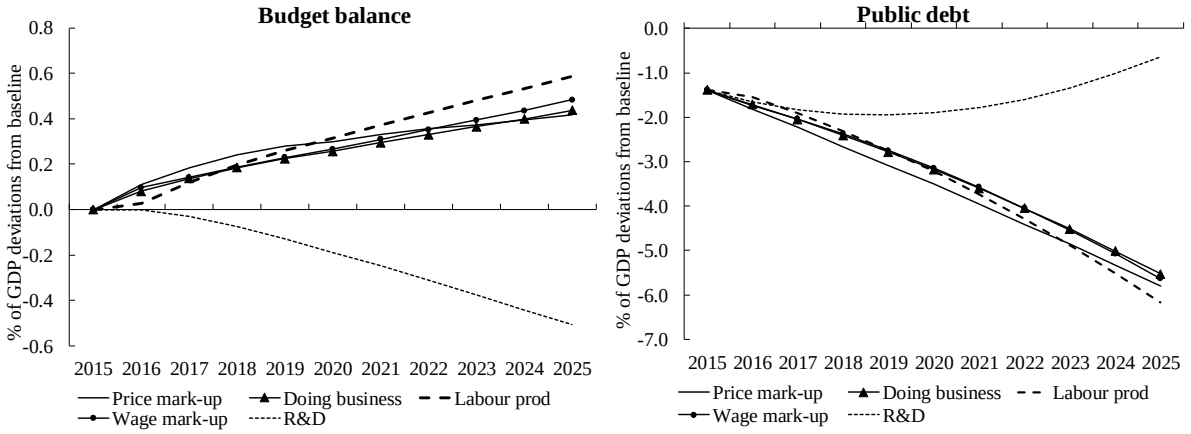
Additionally, such internal structural change would not impair the fiscal stance, in contrast it would relief budgetary pressure and would improve Austria's public debt position (see Figure 4). A reduction of price mark-ups dampens inflation and also the nominal interest rates (see Figure 5). As the inflation declines somewhat stronger than the interest rates, this implies a slight increase of real interest rates.

Figure 3: Labour market effects of structural reforms



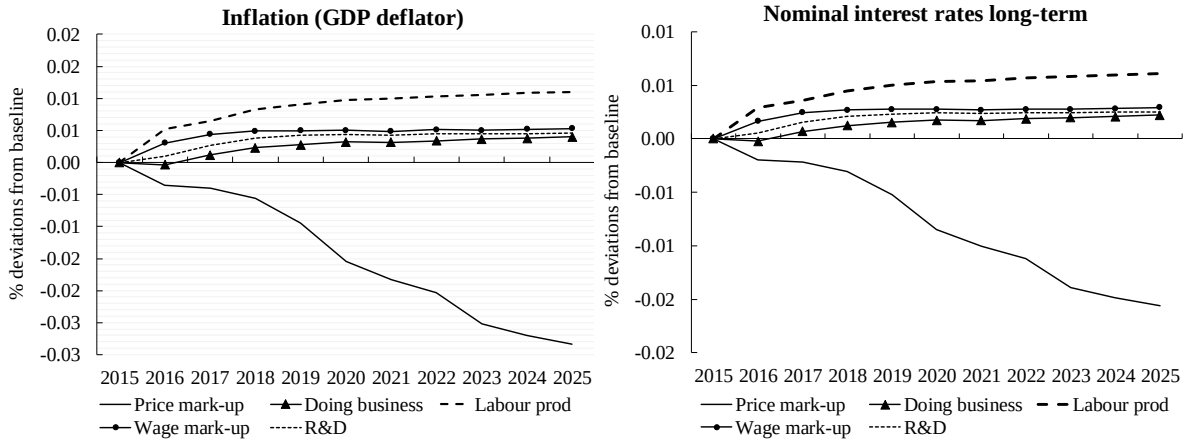
Source: Simulation with the Austrian macro growth model

Figure 4: Budgetary effects of structural reforms



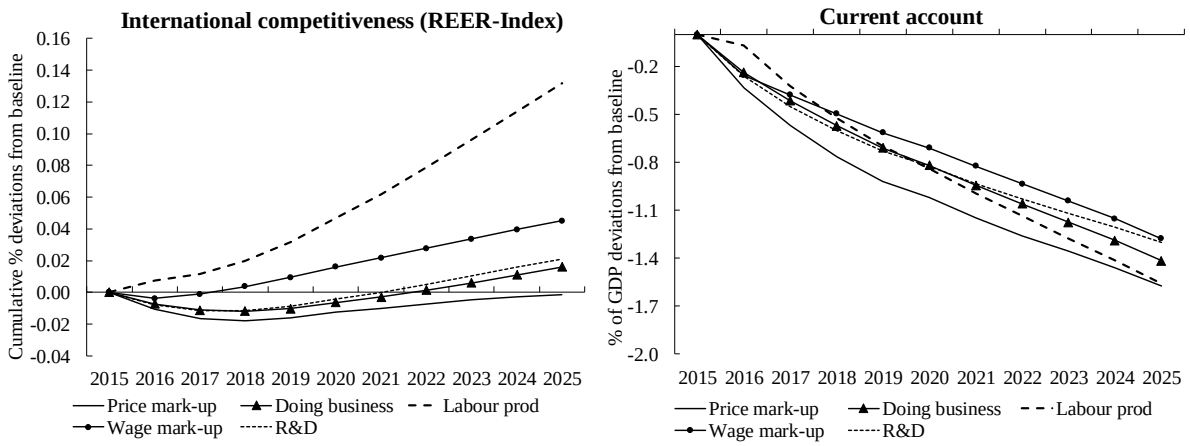
Source: Simulation with the Austrian macro growth model

Figure 5: Inflation and interest rate effects of structural reforms



Source: Simulation with the Austrian macro growth model

Figure 6: International competitiveness effects of structural reforms



Source: Simulation with the Austrian macro growth model

More competition in the Austrian product markets leads to lower inflation (currently, Austria is leading concerning inflation rates in the euro area) which – via sinking unit labour costs - improves the international competitiveness, measured by real effective exchange rates (REER). Nevertheless, the current account balance deteriorates due to a stronger increase of imports than exports. That means that the income effect (increase of Austria's GDP) of imports outbalances the relative price effect via REER in the exports (see Figure 6).

2) Doing business

A further reform step could consist in reducing the entry costs of doing business. Austria is in this respect still not in a top position in international comparisons. Entry barriers are measured by the World Bank's Doing Business indicator. The World Bank makes regularly rankings concerning the "Ease of Doing Business" for 189 countries. In the 11th issue "Doing Business 2014" (see World Bank, 2013) Austria has been ranked at place 30. In the meantime the World Bank has corrected this rank to 19. In the 12th issue (see World Bank, 2014), Austria's "Ease of Doing Business Rank" has deteriorated to 21.

In our model the entry costs are approximated with World Bank's "Doing Business" indicator. Our model is calibrated for Austria with the rank 21 in the year 2015, and then we simulate an improvement of 10 percentage points over the next ten years to reach rank 18.9 in 2025.

Depending on the assumed elasticity in the capital demand equation (3) the growth effects are accordingly. In our model we assumed a relative low elasticity. Nevertheless, the output impulses are in the same order of magnitude as the simulations of Varga et al. (2014) for the southern periphery countries of the euro area. In Austria, the level of GDP would increase

after 10 years by 1% (see Table 1 and Figure 2). This value is similar in the Varga et al. simulations for Italy (0.8%); their GDP effects are lower for Portugal (0.1%) and Spain (0.2%), but higher for Greece (2.4%) which of course has the greatest need for catching up concerning doing business.

Labour market reforms:

Also concerning the labour market efficiency Austria ranks above average of the euro area core (see Figure 1). Nevertheless, one could also think of further improvements towards a more flexible labour market structure. A forerunner in this respect is Germany with its Hartz IV reform.

1) Make labour more productive

With a mixture of labour market policies (flexible working hours; short-time working etc.) one could improve labour productivity.

In our simulation experiment we assumed that such an improvement in labour productivity takes place in the form of a level increase of 1% within ten years. This would lead to short-run level increase of real GDP of 0.1% to 0.2%, increasing cumulatively until 2025 to 1.1% more GDP (see Table 1 and Figure 2). Higher output would lead to only a slight and short-term increase in labour demand and a reduction in unemployment (see Figure 3). The growth enhancing effect of more efficiency in the labour market would come with no costs for the budget (see Figure 4). Higher labour productivity transforming into higher wages would slightly deteriorate international price competitiveness. This together with the negative income effect of rising imports would lead to a deterioration in the current account (see Figure 6).

2) More market power in the labour market

In analogy to the desire for more competition in the goods market (reduction of price mark-up in the demand for capital equation) we model the wish to more flexibility in the wage bargaining process via a reduction in the wage mark-up (in the demand for labour equation). In the Austrian context with its traditional strong Social Partnership with strong employer's representatives and equally strong trade unions, a reduction of the bargaining power of the latter (measured by the term wage mark-up) would be a revolution and hence has less chances of being realized.

Nevertheless we simulated a reduction in the wage mark-up by 10 percentage points over ten years, from 1.5 in 2015 to 1.35 in 2025. This would imply by our model that the wage costs go down and the demand for labour goes up which increases output. The level of real GDP would increase after 10 years by 0.9%, employment by 1.1% (see Table 1 and Figures 2 and

3). Again this would be a relief for the public sector, reducing the budget deficit and improving the public debt position. International competitiveness, however would deteriorate slightly.

Knowledge and innovation:

The core of the endogenous growth literature deals with the impact of knowledge and innovation on output growth. According to our TFP equation R&D investment (which is done in Austria primarily via public expenditures) should stimulate GDP growth via the term technical progress, approximated by total factor productivity (TFP).

Austria had already profited very much from a better access to research programmes of the EU (up to the 7th Frame Work Programme) as an EU member. This stronger participation helped Austria to increase its R&D expenditure more than it could do otherwise since Austria's accession to the EU in 1995 and contributed considerably to the EU integration effects (see Breuss, 2014A).

Starting with a R&D quota of 2.95% of GDP in 2015 we assume a further level increase by one percentage point of GDP cumulating over a period of ten years to reach 4% of GDP instead of 3% in 2025 in the baseline assumption.

More investment in R&D could increase the level of real GDP by 1/4% in the short-run and by 1% of GDP in the medium- to long-run in 2025. This leads to more employment and to a reduction in unemployment (see Table 1 and Figures 2 and 3).

Expenditures on R&D have a considerable impact on GDP growth, however – as they are primarily financed out of the budget in Austria – this growth strategy would be the only structural reform strategy which is not without fiscal costs (see Figure 4). In our model we assumed that total R&D investment is publicly financed. One could reduce the budgetary burden if one would split the financial burden of R&D investment between the private and public sector. According to the OECD (2014) the share of publicly financed R&D expenditures amounts to around 35% in Austria (compared to only 25% in Switzerland). A further source of growth enhancing structural change could be tapped if Austrian firms - like in more advanced economies, e.g. Switzerland - could be motivated to take over more costs of R&D expenditures.

Overall effects of structural reforms:

Our overall results are – although we apply another model and analyse different indicators of structural reforms which are simulated differently (we simulate assumed changes in structural indicators directly, the studies by the European Commission use a benchmark technique (see

our Table 1 versus Table 1 in Varga and in 't Veld (2014B, p. 7)[13] - quite similar to those of Varga and in 't Veld (2014B) with the QUEST model of the European Commission. If all five measures to reform the Austrian economic structure in the goods and labour markets (see Table 1) would be implemented over a period of the next ten years, the level of real GDP could be increased by 1% to 1 ½% in the years 2016 and 2017. The GDP effect would cumulate to 5 1/4% in 2025. This would allow employment to grow by more than 2% in the next ten years. And, most importantly, the budget could be stabilised by reducing public debt considerably.

3.2.2 More globalisation

Austria, after EU accession in 1995 has concentrated its exports primarily on the Single Market which – due to the grand EU enlargements, starting in 2004 – steadily increased. In particular, the opening up of Eastern Europe in 1989 and the following EU enlargements offered Austria's export industry new chances in the emerging market in Eastern Europe. This contributed considerably to the EU integration effects of Austria (see Breuss, 2014A).

Table 2: GDP, employment and budgetary effects of more globalisation

Policy impulse	Size		GDP, real (% deviation from baseline)			Employment (% deviation from baseline)			Public debt (% GDP deviation)		
			2016	**2017**	**2025**	**2016**	**2017**	**2025**	**2016**	**2017**	**2025**
More globalisation											
EU enlargement/TTIP	10.0	pp.	0.0	0.1	0.8	0.0	0.0	0.2	-1.5	-1.5	2.2
Globalisation (EU export share)	-3.0	pp.	0.1	0.2	0.9	0.1	0.1	0.2	-1.5	-1.5	2.7
Euro devaluation											
Euro vs USD	-10.0	pp.	0.2	0.2	0.1	0.1	0.1	0.0	-1.5	-1.5	-0.5
EU research											
R&D spillovers	1.0	%GDP	0.1	0.2	0.5	0.1	0.2	0.2	-1.6	-1.9	-4.2
Total			0.4	0.7	2.4	0.3	0.4	0.7	-6.1	-6.4	0.1

With the exception of the scenario "Euro devaluation" all policy impulses are set gradually over a period of ten years.
Source: Simulation with the Austrian macro growth model

More globalisation:

After the GFC 2009 and the following stagnation in Europe, no great further growth impulses from EU's Single Market can be expected in the near future. This should force the Austrian

[13] Varga and in 't Veld (2014B, p. 7) use the following „structural indicators: 1*) Market competition* (Services sector markups), 2) *Market regulation* (Entry costs), 3) *Tax reform* (Labour to consumption tax revenue ratio), 4) *Skill enhancing reforms* (share of high-skilled; expenditure on high-skilled education; share of low-skilled; expenditure on medium-skilled education), 5) *Labour market reforms* (Female non-participation: low-, medium- and high-skilled; low-skilled male non-participation; elderly non-participation: low-, medium- and high-skilled; ALMP (active labour market policy) (% of GDP over unemployment share); benefit replacement rate, 6) *R&D measures* (R&D tax credit rates). The performance of these structural indicators for each of the 28 EU Member States are then compared with the 3 average best performers. Scenarios are then simulated in which half the gap vis-à-vis the best performers is closed over time.

industry to reorient its market strategy. Instead of exporting to the stagnating European markets more effort should be put into a reorientation towards the more faster growing markets outside Europe, the BRICS and other developing countries.

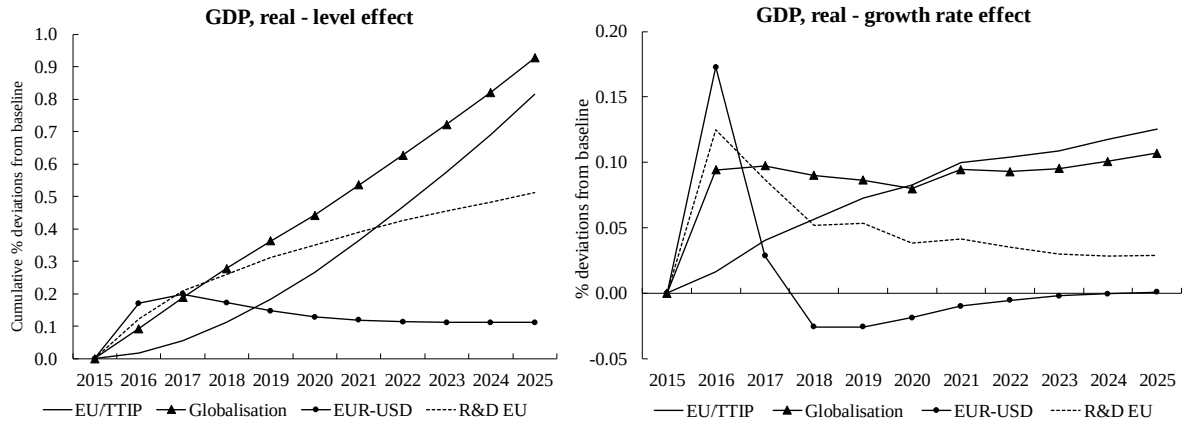
In the following globalisation experiments we simulate four possible strategies: 1) Either more EU integration via enlargement (which was excluded for the near future by Jean-Claude Juncker, the new President of the European Commission) or a successful conclusion of TTIP (see Breuss, 2014B and 2014C): 2) A reorientation from the EU to Non-EU export markets; and 3) A devaluation of the Euro vs the US-Dollar; and 4) A stronger participation in EU Research Programmes.

1) More EU integration or TTIP

With an EU integration dummy variable which stands at 1.50 in 2015 we simulate a further impulse either from more EU integration (either from deepening or enlarging the EU) or from a successful conclusion of the TTIP. For this purpose we increase the integration dummy *INT* – which play a role in the trade equations – by 1% per year to reach 10% increase after ten years and a level of 1.65 in 2025.

As a result, the level of real GDP increases by 0.8% after ten years and gives some impulse for more employment. Again this growth strategy would not hamper the budget but would act as a relief – at least in the short- to medium-run (see Table 2 and Figure 7).

Figure 7: GDP effects of more globalisation



Source: Simulation with the Austrian macro growth model

2) Globalisation

The opening up of Eastern Europe in 1989 and the following EU enlargements gave Austria a chance to participate in the so-called “Mini-Globalisation” towards Eastern European markets. As the outlook for this region is rather gloomy due to uncertainty in the context of

the Ukraine-Russia crisis, Austria could reorient its exports and increase the export radius towards the faster growing markets outside Europe (BRICS etc.).
In this simulation exercise we assume that Austria succeeds to shift its export share from EU to Non-EU markets by 0.3 percentage points per year, starting in 2016. After ten years this would result in an EU export share of only 66% instead of 68% in 2015.
This would lead to a considerable permanent impulse for real GDP. Its level would increase cumulatively by 0.8% in 2025 (see Table 2 and Figure 7). Also this growth strategy would have positive effects in the labour market and for the budget and would decrease the debt burden – at least in the short- to medium-run.

Euro devaluation:
A standard model exercise is the change of the exchange rate. We assume that the Euro devaluates against the US-Dollar by 10% in 2016.
This would lead to a level shift of real GDP by 0.2% in the short-run, but then this growth impulse would gradually decline. The positive employment effect would therefore be small, but one could expect a reduction of public debts (see Table 2 and Figure 7).

More participation in EU research programmes:
Austria already participated to a considerable degree at the EU research programmes (up to the 7th Frame Work Programme). If one assumes that the EU will further direct its budgetary means towards more investment in knowledge and innovation (as is already planned in the "Multiannual Financial Framework 2014-2020 (see European Commission, 2013[14]) and Austria would participate in this development it could gain external growth impulses via spillovers of R&D investment in the EU (implemented into the TFP equation (2)).
We simulate a gradual increase of 0.1 percentage points in R&D in the EU which would reach a R&D ratio to GDP of 3.3% instead of 2.3% in the baseline in the year 2025.
As a result Austria could increase its real GDP via the spillover effect in the TFP equation by 0.5% in the year 2025 (see Table 2 and Figure 7). This would also be positive for the labour market and would decrease the debt to GDP ratio.

[14] Within the "Multiannual Financial Framework 2014-2020" the share of the budgetary expenditures for chapter 1 (*Europe 2020* strategy for smart and inclusive growth) is increased from 46% in 2015 to 49% in 2020 of total commitment appropriations (for the sub-chapter 1a "Competitiveness for growth and jobs" the share increases from 12% to 15%).

3.2.3 Traditional monetary and fiscal policy

Many Keynesian oriented experts advocate in the present desperate economic situation in Europe more public spending, either from potent EU member states (like Germany[15]) or at EU level (see Juncker's EUR300 bn investment plan). The problem with Keynesian demand policy is that it has only a short-run impact on GDP and jobs but leads to an accumulation of public debt which is already too high.

In the following we simulate some aspects of the traditional aggregated demand policy via monetary and fiscal policies.

Table 3: GDP, employment and budgetary effects of monetary and fiscal impulses

Policy impulse	Size		GDP, real (% deviation from baseline)			Employment (% deviation from baseline)			Public debt (% GDP deviation)		
			2016	**2017**	**2025**	**2016**	**2017**	**2025**	**2016**	**2017**	**2025**
Monetary policy											
Credit	10.0	pp.	0.3	0.4	1.3	0.2	0.3	0.6	-1.8	-2.2	-6.3
ECB interest rate	-1.0	pp.	0.8	0.5	0.1	0.7	0.3	0.0	-0.4	-1.0	-5.1
Total monetary policy			*1.1*	*0.9*	*1.4*	*0.9*	*0.6*	*0.5*	*-2.2*	*-3.2*	*-11.4*
Fiscal policy											
Direct taxes	-1.0	%GDP	0.7	0.5	0.2	0.6	0.3	0.0	-1.4	-0.5	5.7
Subsidy	1.0	%GDP	0.6	0.4	0.2	0.5	0.3	0.0	-1.2	-0.3	6.0
Indirect taxes	-1.0	%GDP	0.0	0.3	0.1	-0.1	0.1	-0.1	-0.3	0.4	7.9
Total fiscal policy			*1.3*	*1.2*	*0.5*	*1.0*	*0.7*	*-0.1*	*-2.9*	*-0.4*	*19.7*
Total			2.4	2.1	1.9	1.9	1.3	0.4	-5.1	-3.6	8.2

Credit growth is implemented gradually over ten years. All other policy impulses are implemented to the full extent already in the year 2016.
Source: Simulation with the Austrian macro growth model

Monetary policy:

We analyse only two scenarios of monetary policy, one concerns the credit policy, the other a traditional decrease of ECB interest rate.

1) Credit easing

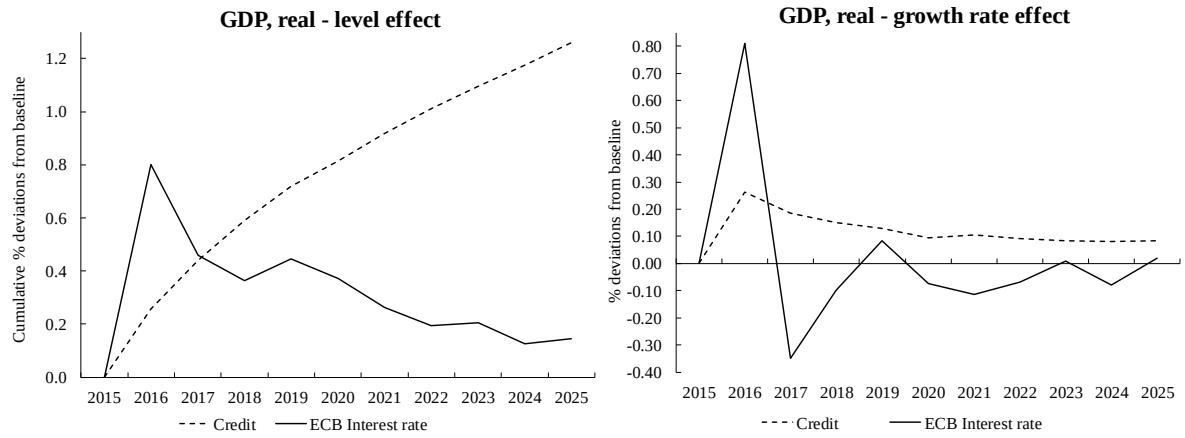
After exhausting the traditional monetary policy measures (interest rate decline to the zero bound level), the ECB – since the Euro crisis – embarked (like the Fed in the United States and the Bank of Japan) into unconventional monetary policy measures (TLTR operations; outright purchases of asset-backed securities (ABS)). Starting in 2015, the ECB also embarked into quantitative easing (QE) in order to make the transmission of loose monetary policy to the real sector better working. That measures are expected to contribute to further

[15] In 't Veld (2013) and D'Auria et al. (2014) demonstrate with the QUEST model that a fiscal stimulus (public investment of 1% of GDP) in the core euro area countries (in particular in Germany) would lead to relatively high spillovers to other euro area countries, boosting their GDP by between 0.2 and 0.3 %.

credit easing. Whether the shortening of credit supply ("credit crunch") is not only a reaction to weak demand is an open question.

With our growth model we simulate a graduate increase credit supply by 10% over the next ten years. Credit enters the capital demand equation (3) as a positive factor for investment. According to our assumption concerning the credit elasticity the level of GDP could be steadily increased by 1.3% until 2025 (see Table 3 and Figure 8) [16]. And there would be no costs for the budget.

Figure 8: GDP effects of monetary impulses



Source: Simulation with the Austrian macro growth model

2) ECB interest rate

We assume an immediate reduction of ECB's target interest rate by 1 ppt. in 2016. This translate directly into the short term interest rates in Austria. With some lag this enhances a decline of Austria's long-term interest rate. The interest rate shock leads to a short-term level increase of real GDP by 0.8%, however, the impulse declines rather rapidly (see Table 3 and Figure 8). Jobs could be created and the public debt to GDP ratio would decline.

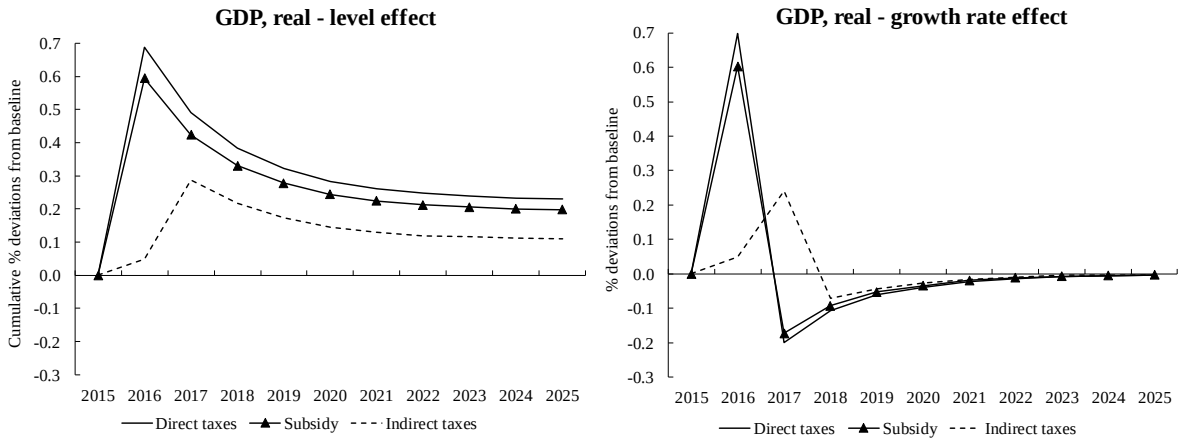
Fiscal policy:

As the initial conditions in Austria include levels of budget balances and public debt in relation to GDP, that already surpass the rules of the Stability and Growth Pact (Six Pack) and those of the Fiscal pact, Austria's fiscal policy is constrained. Nevertheless, we simulate for demonstration purposes how the model works when shocked by measures of fiscal expansion.

[16] The size of the short-term impact of ECB's QE in our simulation exercise is quite similar to that in simulations with the Oxford Economic Global Economic Model (see Breuss, 2015B).

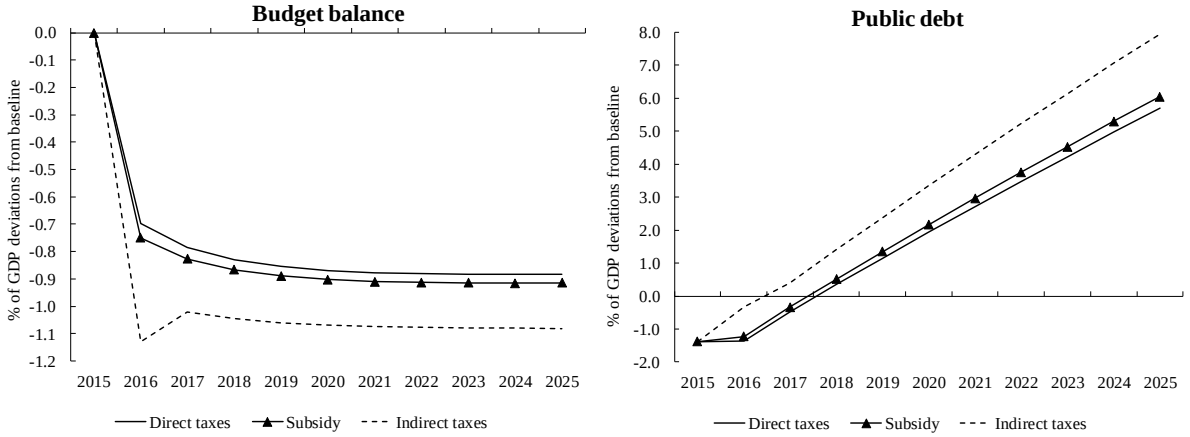
We reduce direct and indirect taxes and increase subsidies[17]. This policy impulses (in the order of 1% of GDP) are implemented immediately and to the full extent in 2016.

Figure 9: GDP effects of fiscal impulses



Source: Simulation with the Austrian macro growth model

Figure 10: Budgetary effects of fiscal policies



Source: Simulation with the Austrian macro growth model

1) Direct taxes

We relief the economy (consumers and investors) by a reduction of the burden of direct taxes by around 1% of GDP (or EUR 4.5bn). In our model simulations this could increase real GDP

[17] Varga and in 't Veld (2014B) simulate in the context of structural reform scenarios also changes in the tax revenue structure: labour to consumption tax revenue ratio. In Austria this ratio is 2.4 and hence far away from the ratio 0.9 of the 3 best performer in this category. In a more comprehensive study about the reform of the tax structure in general in the EU, Burgert and Roeger (2014) highlight some attractive properties of tax shifts from labour to consumption. Such a tax reform has positive effects on growth and on the external balance. The extent to which a fiscal devaluation is growth enhancing importantly depends on the extent to which benefit and transfer recipients are compensated for their purchasing power losses owing to the consumption tax increase.

by 0.7% in the short run (see Table 3 and Figure 9). However, there are direct costs of this "tax reform[18]" (see Table 3 and Figure 10). The budget deficit would increase by around 1% of GDP, public debt to GDP ratio would go up by nearly 6% of GDP.

2) Subsidy

When stimulating the economy by increasing subsidy by around 1% of GDP, the GDP effect would be only slightly below that of a reduction of direct taxes. The level of real GDP would increase by 0.6% (see Table 3 and Figure 9). The budgetary costs would be similar to those of a reform of direct taxes (see Table 3 and Figure 10).

3) Indirect taxes

A relief of consumers by a reduction of indirect taxes amounting to 1% of GDP would have lagged and also lower effects than a relief of direct taxes by the same amount. The reason is that indirect taxes would have direct price effects and would, hence increase the purchasing power of consumers (see Table 3 and Figure 9).

Overall, fiscal policy measures (the whole package of tax reliefs and subsidy increases) would – at least in the short-run - have higher GDP effects than the monetary policy measures here applied (see Table 3). However, this would come at considerable high budgetary costs. In the light of the EU fiscal rules fiscal policy stimuli would be no real option to generate growth in the medium run.

4) Fiscal multipliers

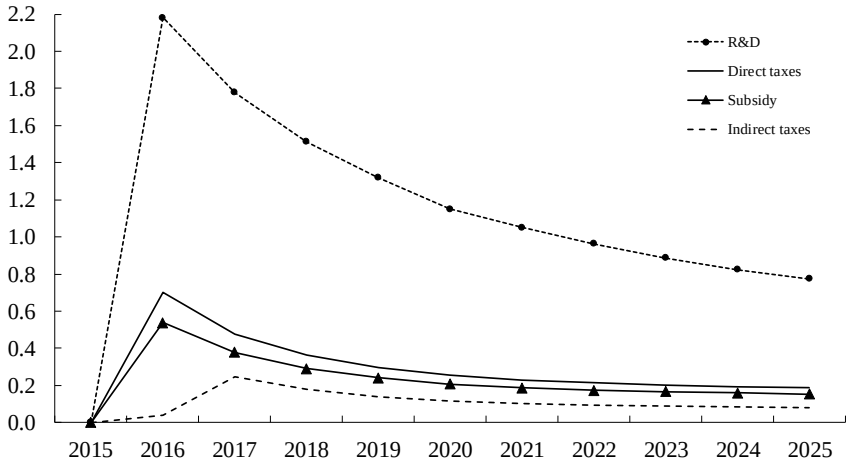
In order to check whether our growth model works roughly well also in the context of fiscal shocks we check the outcome of our policy interventions in terms of fiscal multipliers. Additionally to the impact of tax reforms (decrease of direct and indirect taxes) and the increase of subsidies we also examine the fiscal multiplier of the investment in R&D (see Figure 11). The fiscal multiplier refers to the impact of the fiscal (R&D) impulses on real GDP.

Investing in knowledge & innovation (R&D) would lead to the largest fiscal multiplier. This strategy would – because in our model specification R&D in Austria is fully financed publicly – come with some budgetary costs, but they would be much less than in the case of the traditional fiscal policy shocks (compare Figure 4 with Figure 11). Within the traditional fiscal policy shocks the decrease in direct taxation would have the highest fiscal multiplier, followed by an increase of subsidies and indirect taxation with the lowest multiplier. Indirect tax reliefs only react a little bit lagged to the shock, due to price effects. In 't Veld (2013)

[18] The Austrian government decided on a tax reform taking effect in 2016 amounting to EUR 4 bn. (or 1.1% of GDP) by lowering the tax burden for wage and income earners. As the reform is designed budget-neutral (by cutting equivalent spending), the net impact on real GDP is zero (see Schiman, 2015).

estimated a fiscal multiplier for Germany (after an increase of government investment by 1% of GDP) of 0.8 to 0.9 in the first two years of the shock. This would translate into the other euro area countries with a fiscal multiplier of around 0.2 to 0.3 in the short-run.

Figure 11: Fiscal multiplier of alternative fiscal policies



R&D = public expenditure on R&D; TD = direct taxation; SUB = subsidies; TIND = indirect taxation.
Source: Own calculations based on the results of the Austrian macro growth model

4. Conclusions

Europe, the EU und in particular the euro area is embarking into a period of slow growth. Whether this already earns the name "secular stagnation" is an open question. It resembles in some aspects the development in Japan. A possible "Japanisation" of Europe (near-stagnation and deflation) in the decade to come cannot be excluded. However, due to self-imposed fiscal breaks the explosive public debt development of Japan will probably never happen in Europe. Austria, which was privileged before the crisis by the positive effects of EU integration ("EU growth bonus"), now falls back to normality or to an economic equilibrium with lower growth rates and must seek a growth strategy of its own. Out of the "three arrows" of economic policy, Austria as a member of the euro area cannot gear monetary policy which is done by the ECB. So there remain fiscal policy and structural reforms. Due to the unsustainable initial conditions on the fiscal side (too high budget deficits and too high public debt levels in the light of the new EU fiscal rules) a considerable fiscal expansion is excluded at present. What remains is the strategy of structural reforms.

Simulations show that – although Austria belongs to the group of countries which are already advanced concerning the efficiency in the product and labour market – there is still room for manoeuvre to increase market competition and to lower market regulation concerning "doing business" in Austria. And a further increase in R&D investment is of course always welcome

to stimulate growth. In addition to pure structural reforms and R&D investment there are two promising growth strategies for a small open economy: *First*, Austria can further participate in a possible deepening and/or enlargement of the European Union (although a further EU enlargement is politically excluded for the next five years) and benefit from a hopefully successful TTIP. *Secondly*, Austria could stimulate growth by reorienting its export markets from only the presently slow growing EU-28 to the faster growing newly industrial countries (BRICS etc.) by embarking into more globalisation.

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