

Tax receipts, the economic cycle and potential GDP¹

By Carsten Colombier, Economic Analysis and Policy Advice, FFA, and Alain Geier, Economic Analysis and Policy Advice, FFA

According to prevailing macroeconomic theory, short-term fluctuations in demand and monetary stimuli do not have any long-term effects on production and employment. However, there are a number of theoretical and empirical arguments which call this assumption into question – at least in part. When planning financial policy, however, the question of the development of GDP beyond the time horizon of economic forecasts is of great significance, particularly if changes in direction are to be identified at an early stage and Swiss debt brake regulations adhered to without a stop-go policy.

Potential growth and financial planning

The question of the relationship between the short term and the long term – or between the short-term economic cycle on the one hand, and medium to long-term growth on the other – is crucial when it comes to planning economic policy, be it of a monetary or a fiscal nature. A sustainable fiscal policy is necessarily geared around the development of receipts and therefore also around their key determining factor, namely gross domestic product (GDP). In Switzerland, this policy is also geared around the need to adhere to the debt brake regulations – i.e. the fiscal rule applicable at federal level – by means of a so-called "economic cycle coefficient" (*Konjunkturfaktor*). However, receipts fluctuate in line with the economic cycle, and this inevitably begs the question of what the actual trend level of receipts is on which expenditure should be based. The current uncertainties regarding the future development of GDP and receipts following the recent financial and economic crisis give this issue heightened significance.

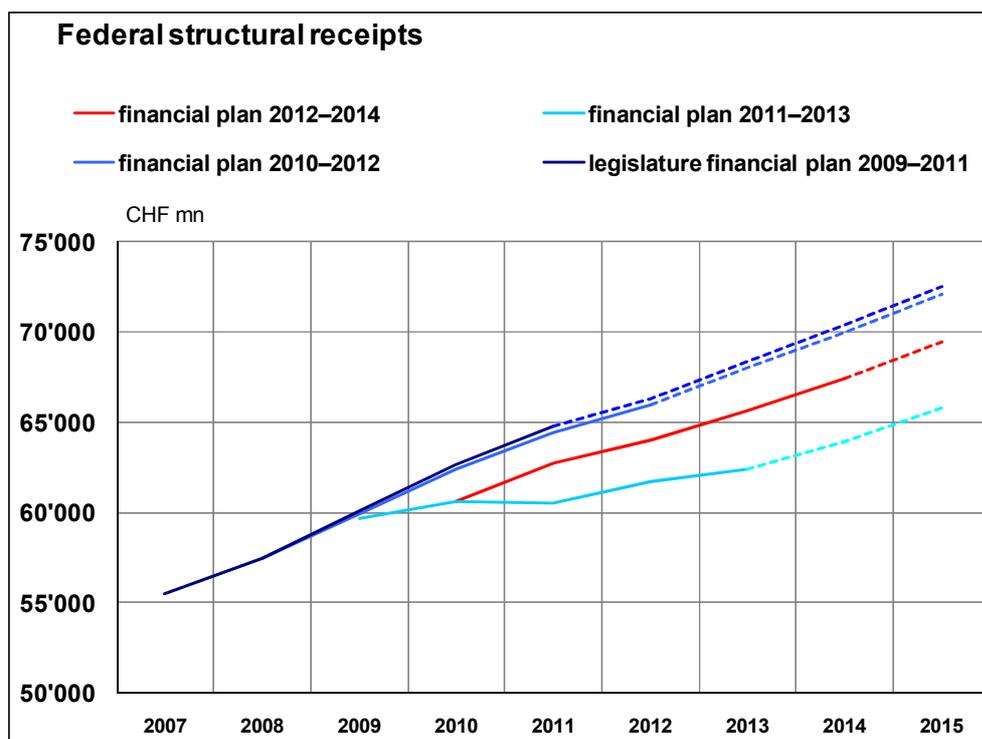
The recent crisis has also highlighted certain weaknesses in modern economic theory. As a rule, theoretical economics presupposes a general equilibrium to which

¹ Appeared in: Die Volkswirtschaft – Das Magazin für Wirtschaftspolitik [*The Magazine for Economic Policy*], 84(6), 14 – 17 in German and French.

<http://www.dievolkswirtschaft.ch/editions/201106/Colombier.html>

GDP eventually returns following an economic slump or other short-term shock. The question of whether this assumption is actually justified has been scrutinised in an analysis of theoretical principles (Colombier, 2011) as well as through empirical investigation (Geier, 2011). The results of these studies are summarised below.

Figure 1



Source: FFA financial plans, own projections

Legend:

Ordinary receipts of the Confederation, multiplied by economic cycle coefficients in accordance with the financial plans. The first year corresponds to the budget (as per Federal Council Decree). The dotted lines are straightforward projections based on the last financial plan year; nominal receipt growth of 3% is assumed.

Theoretical basis

The dominant theoretical approach of modern macroeconomics is the so-called New Neoclassical Synthesis (NNS), a branch of New Keynesian economics. According to the NNS, as a result of fully flexible prices over the long term, economic fluctuations

do not exercise any impact on the long-term position of an economy, as measured through potential GDP and the natural unemployment rate.²

The NNS explains short-term economic fluctuations through (Keynesian-style) elements of price and wage rigidities. Modelling within the context of the NNS is based on the model of monetary real business cycle (RBC) theory, which is a so-called dynamic stochastic general equilibrium model (DSGE model). The model results presuppose the inter-temporal maximisation of economic benefit by a representative rational agent who forms rational expectations and therefore commits no systematic forecast errors.

A central assertion of the NNS is that – despite rational expectation formation against a backdrop of price rigidities – the ineffectiveness of stability policy as suggested by RBC models is not a tenable thesis. In other words, fluctuations in demand modelled as exogenous stochastic shocks can produce short-term deviations from the long-term equilibrium, i.e. fluctuations of the economic cycle, because price and wage adjustments react only sluggishly. In contrast to RBC theory, monetary policy becomes meaningful again in this respect, as it can help accelerate the adjustment process back towards the long-term equilibrium, even though it cannot influence that equilibrium over the longer term. The NNS adopts a rather sceptical stance where fiscal policy is concerned. On the basis of the Ricardian equivalence of the neutrality of fiscal policy and time lags in the political decision-making process ("inside lag"), a majority of NNS exponents recommend avoiding an active fiscal policy in favour of letting automatic stabilisers exercise their impact passively. Fiscal policy that matches this approach is practised at federal level through the debt brake approach, for example.

Long-term effects

According to the NNS, however, a collapse in demand such as that triggered by the latest financial market crisis, which led to a 1.9% decline in Swiss GDP in 2009, has

² The natural unemployment rate is the level of unemployment that is not dictated by the economic cycle. In particular, the natural unemployment rate subsumes both frictional and structural unemployment.

no persistent effects. Nonetheless, longer-term effects can be expected from fluctuations in demand under certain circumstances. The first aspect to cite in this respect is the so-called "hysteresis" effect on the labour market. This states that the level of unemployment resulting from the economic cycle can become structural as periods of extended high unemployment persist. Among the reasons for this development are the de-qualification effect associated with prolonged unemployment and the reduced chances of obtaining a new position (signalling effect). In addition, there may be several (multiple) long-term equilibriums. For example, it has been observed in many OECD countries that labour productivity, which is theoretically shaped over the long term, can nonetheless fluctuate with the economic cycle. If unions successfully push through their demands for "equal pay for equal work", a change in demand can likewise have an impact on GDP potential (Bhaskar's fairness model).

In a development largely triggered by the financial crisis, the NNS has recently come under heavy criticism from prominent economists such as Buiter, Goodhart, Krugman and Stiglitz.³ In particular, their criticism focuses on the failure to take the financial markets into account, on the lack of empirical evidence for the model relationships, and on the assumption of a representative rational agent and that agent's rational expectation formation. Modern behavioural economics has shown empirically that the behaviour of real-world agents regularly deviates from the assumed behaviour of the rational agent as hypothesised by the NNS (anomalies).⁴ For example, the so-called anchoring effect tends to lead individuals with incomplete knowledge of a situation to extrapolate future developments such as the future rate of inflation rather than form rational expectations. However, behaviour that is only partly rational is also conducive to the persistence of economic fluctuations.

The NNS barely entertains the idea of events in the finance sector rippling out and impacting on the real economy. By contrast, there is a strand of New Keynesianism which specifically considers financial market issues (FNK) and assumes that the information available on the financial markets is imperfectly and asymmetrically

³ For a comprehensive critique of the NNS, see in particular Buiter (2009).

⁴ cf. De Grauwe and Honkapohja (2009).

distributed among market participants such as companies and banks.⁵ The risks of credit default and bankruptcy are therefore not fully diversifiable, which means agents are acting in a state of uncertainty, a set of circumstances that deviates from the NNS. The higher the proportion of companies predominantly financed through debt, the more likely fluctuations in the economy are to be relevant over the longer term. Similarly, restrictive financing conditions for research and development (R&D) investment can act as a drag on growth.

The post-Keynesian (PKE) approach does not rest on a general equilibrium model like the NNS, but assumes an explicitly monetary economy.⁶ The fact that money is viewed as an optimum tool for insuring against an uncertain future justifies the existence of a liquidity premium. This liquidity premium is of key significance for the long-term development of an economy, as via the financial sector it can influence the prices on product markets, investment activity, and therefore capital accumulation. In PKE, the finance sector and the demand side can have an effect on GDP potential. It was ultimately a number of post-Keynesian economists who warned at an early stage of the dangers of the US real estate bubble bursting.⁷

The case of Switzerland

Table 1: Repercussions of economic fluctuations on GDP potential in Switzerland

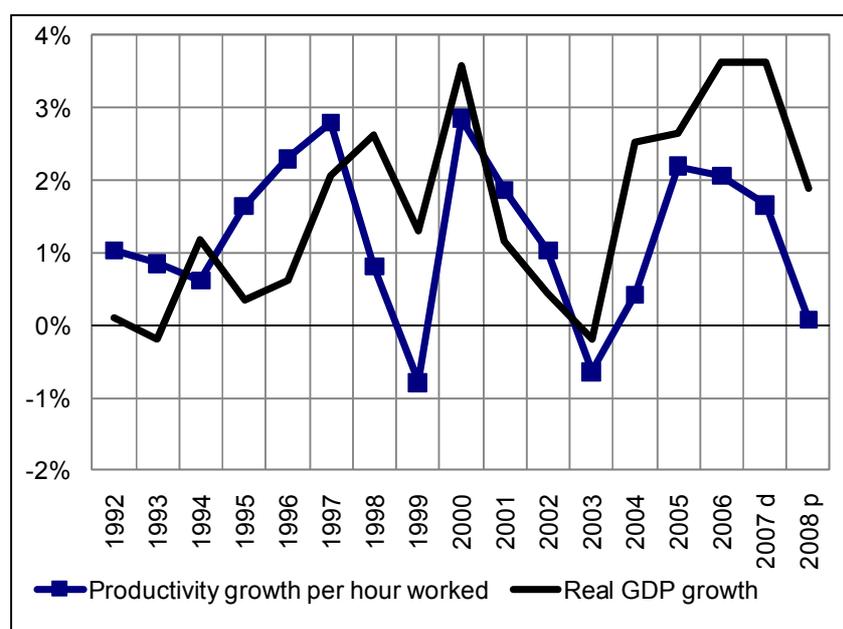
Channel	Rationale	Relevance for Switzerland		
		fairly relevant	less relevant	rather irrelevant
Multiple equilibriums	Fluctuations in labour productivity		x	
Hysteresis	e.g. de-qualification of the unemployed and signalling effect		x	
Fairness considerations	Bhaskar's fairness model			x
Credit channel	Market imperfections, sales uncertainty, and Keynesian "animal spirits"			
	- SME financing	x		
	- R&D financing		x	
Exchange rate channel	Structural change in export economy	x		

⁵ For an insight into FNK see Größl and Stahlecker (2000).

⁶ For an introduction to PKE see Hein (2005).

⁷ See Bezemer (2010) and <http://www.voxeu.org/index.php?q=node/4035>.

Figure 2: Productivity advances and economic growth in Switzerland 1992 – 2008



Source: Federal Statistical Office

One potential transmission channel through which economic fluctuations can impact the long-term position of an economy is the influence of demand on the development of labour productivity. Although advances in productivity in Switzerland between 1992 and 2008 fluctuated more or less in step with aggregate economic demand, the (pro-cyclical) fluctuations virtually cancelled each other out (see Figure 2).

As a further route of transference from the economic cycle to the long-term state of an economy, hysteresis manifests itself through an increase in long-term unemployment. However, from an empirical viewpoint hysteresis is virtually indistinguishable from the structural selection effect, which likewise feeds through into long-term unemployment.⁸ In addition, according to the OECD a role is played in Switzerland by institutional factors such as the decentralisation of social services. As the long-term unemployment rate of 1.1% in 2009 is relatively low compared with the OECD average of 1.9%, hysteresis is unlikely to have a high degree of importance for the transmission of economic stimuli to Swiss GDP potential.

⁸ See Aepli and Ragni (2009).

Given the low level of trade union membership of the Swiss workforce (18% compared with 27% for the OECD average as of 2008), Bhaskar's fairness model is unlikely to be relevant.

The external financing requirements of SMEs for investment purposes are largely met through bank loans.⁹ As just under 67% of employed Swiss (as measured through full-time equivalents) are employed in SMEs according to the Business Census of the Federal Statistical Office (as of 2008), a pro-cyclical policy of granting credit by banks can have an impact on potential GDP via the SME sector. In a banking crisis, this transmission route is likely to increase in significance, as the dwindling net asset position and increased counterparty risk of the banks give them an incentive to liquidate existing receivables.

In a severe recession, the credit financing of high-risk R&D expenditure may be restrictive, which in turn can have a dampening effect on future GDP potential. According to the OECD, however, the lion's share of R&D investment in Switzerland is carried out by large companies that have access to the international capital markets. Moreover, as much as 20% of all R&D expenditure (as of 2004) is financed by the state.

Furthermore, it is conceivable that an excessively abrupt appreciation of the Swiss franc will entail structural adjustments for the export economy (e.g. the outsourcing of production locations to the euro area) and therefore restrain Swiss GDP potential. Conversely, the steady appreciation of the Swiss franc against the euro and the dollar tends to strengthen competitiveness, which in turn would have the effect of increasing GDP potential.

Overall, these initial considerations suggest that demand-related economic fluctuations in Switzerland can have an effect on potential GDP, above all via the credit and exchange rate channels.

⁹ See <http://www.kmu.admin.ch/politik/index.html?lang=de>.

Empirical investigation for Switzerland

The study by Geier (2011) referred to at the beginning of this article looks at the question of whether shocks have persistent repercussions for Swiss GDP – for example, if there is a permanent shift in the level of GDP figures following a recession. In keeping with the majority of studies for other countries, Geier arrives at the conclusion that short-term momentum does have an impact on the longer term where Switzerland is concerned. This study was conducted using time series analyses and a so-called non-parametric approach on the basis of annual data for real GDP and real GDP per capita since 1914.¹⁰

Results

The results suggest that short-term fluctuations have a strong impact on the longer-term GDP level. Indeed, the results imply that the impact of a short-term shock is even magnified in the longer term before its effect then gradually weakens. However, according to Campbell and Mankiw (1987), the time series approach is likely to exaggerate the persistency of this effect. This in turn suggests that while a short-term GDP shock may have a long-term impact, some this impact will fizzle out over time. The long-term impact on GDP per capita is less clear, which may have to do with the fact that historical GDP shocks in Switzerland have tended to give rise to migration flows, hence GDP has typically changed more dramatically than productivity per worker after these shocks.

In data samples involving structural breaks, the tendency to absorb shocks is generally greater. In the models that do not adjust for structural breaks, a clear discrepancy emerges between the random samples using data from the period 1950-2009 and those based on data from 1914-2009. The former are dominated by the growth slowdown at the beginning of the 1970s, whereas this effect is less pronounced in the longer data samples.

¹⁰ The data from 1914 to 1948 comes from Andrist et al. (2000).

The applied statistical methods do not allow for any clear demarcation of cause and effect. For example, shocks can also be caused by supply-side technology advances, and it is also conceivable that a demand shock may result in a less persistent effect than a supply shock.

Conclusion

According to a number of different economic theories, both demand-driven fluctuations and other short-term fluctuations can occasionally result in persistent effects. Under the NNS approach, however, this is usually difficult to model, as interactions between heterogeneous agents, among other things, are not taken into account. A key aspect – which was made particularly clear in the case of the recent financial and economic crisis – is the virtual exclusion of the financial sector, with bankruptcy and liquidity risks in particular not being factored in. At the same time, the higher the degree of debt financing for companies is, the more relevant short-term momentum can prove over the longer term.

Where Swiss potential GDP is concerned, the financial market crisis in 2008 and the major recession that followed in 2009 have so far resulted in few longer-term consequences. In 2010, the Swiss economy was once again exhibiting strong momentum, and its economic outlook remains healthy. No extraordinary saving measures have therefore been necessary at the federal level to fulfil the requirements of the debt brake rule.

That said, Switzerland's further economic development is still overshadowed by a number of risks. These include the persistent strength of the Swiss franc against a backdrop of the sovereign debt crisis in the euro area and the US, as well as a strongly growing domestic economy driven by generous mortgage lending and a booming construction sector. This rate of growth could yet prove to be unsustainable. Despite everything, therefore, it is not yet possible to rule out the possibility of the after-effects of the financial and economic crisis being transferred to the real economy via the credit or exchange rate channels and having a dampening effect on potential GDP in Switzerland – and therefore placing a further structural burden on

government finances, irrespective of any expenditure and tax decisions on the part of the state.

Literature

Andrist, F., Anderson, R.G., Williams, M. M. (2000), Real Output in Switzerland: New Estimates for 1913-1947, Federal Reserve Bank of St. Louis, May-June, pp. 43-70.

Aeppli, D.C, Ragni, Th. (2009) Ist Erwerbsarbeit ein Privileg?, *Labour Market Policy* No. 28, State Secretariat for Economic Affairs, Federal Department of Economic Affairs.

Bezemer, D. J. (2010) Understanding Financial Crisis through Accounting Models, *Accounting, Organizations and Society*, 35, 676 – 688.

Buiter, W. (2009) The unfortunate uselessness of most "state of the art" academic monetary economics, VoxEu.org, 6 March 2009. <http://www.voxeu.org/index.php?q=node/3210>

Campbell, J.Y., Mankiw, N.G. (1988) Permanent and Transitory Components in Macroeconomic Fluctuations, *American Economic Review*, 77(2), pp. 111-117.

Cochrane, J.H. (1988) How Big is the Random Walk in GNP?, *Journal of Political Economy*, pp. 893-920.

Colombier, C. (2011) Konjunktur und Wachstum Teil I - Eine Betrachtung aus theoretischer Sicht, *Working Paper of the Federal Finance Administration* no. 16.

De Grauwe, P., Honkapohja, S. (2009) The Macroeconomy, in: European Science Foundation (ed.), *Vital Questions – The Contribution of European Social Science*, 16-19.

Geier, A. (2011) Konjunktur und Wachstum Teil II - Eine empirische Untersuchung für die Schweiz, *Working Paper of the Federal Finance Administration* no. 17.

Größl, I., Stahlecker, P. (2000) Finanzierungsbedingungen und Güterangebot: Ein Überblick über finanzökonomischen Ansätze und deren geldpolitische Konsequenzen, *Jahrbücher für Nationalökonomie und Statistik*, 220(2), 223 - 250.

Hein, E. (2005) Reale und monetäre Analyse: Post-Keynesianismus und Neu-Keynesianismus im Vergleich, in: Hein, H., Heise, A., Truger, A. (Hrsg.) *Neu-Keynesianismus - der neue wirtschaftspolitische Mainstream?*, Metropolis-Verlag, Marburg, 137 - 178.