

## GDP volatility in Liechtenstein and the role of the financial sector

In Liechtenstein, GDP volatility never converged to low levels reached in other developed countries and picked up from historically low levels already prior to 2008. It is well documented that volatility has adverse impacts on economic activity.<sup>1</sup> From the 1980s until 2008, when the global economic and financial crisis erupted, most developed countries experienced a period of low business cycle volatility. This episode is often referred to as the “Great Moderation”.<sup>2</sup> Considering Liechtenstein, however, we do not observe comparable volatility patterns of key macroeconomic aggregates.<sup>3</sup> As an indication for business cycle volatility, we consider standard deviations of the annual real GDP growth rates calculated from 7-years windows (centered moving averages). Figure B1.1 shows the historical evolution of the standard deviations for Liechtenstein in comparison to Switzerland, Germany and Austria. The available GDP data for Liechtenstein range from 1972 until 2017.<sup>4</sup> Consistent with most developed countries, we observe a downward trend in business cycle volatility for Switzerland, Austria and Germany until the global financial and economic crisis.

By contrast, after an initial decline, business cycle volatility picked up in Liechtenstein already in the mid-1990s. Moreover, in absolute values, standard deviations of GDP growth rates are well above the levels observed in the neighboring countries. Recently, business cycle volatility has decreased in all countries including Liechtenstein.

**The generally higher volatility is related to the size of Liechtenstein’s economy.**<sup>5</sup> As small states typically feature a high degree of openness, domestic demand plays a less important role. As a consequence, small nations are more exposed to external shocks. In addition, a small country like Liechtenstein has only limited leverage for policy intervention: Liechtenstein has no monetary policy mandate and fiscal policy is less effective as domestic demand plays a subordinate role. Finally, small states are typically less diversified in terms of the number of firms and sectoral differentiation, which is also the case in Liechtenstein to some extent.

**The increase in business cycle volatility long before the global financial crisis is mostly due to financial sector developments in Liechtenstein.** The financial sector is characterized by relatively high volatility,

BOX 1

1 *The channel through which volatility affects the economy is through economic uncertainty. Higher volatility makes it harder to foresee future outcomes which induces uncertainty, making economic agents reluctant to engage in consumption, investment and hiring decisions that are costly to reverse. Higher uncertainty also increases the premium on external finance (Bloom 2009, Alessandri and Mumtaz 2019).*

2 *The literature offers several explanations for the Great Moderation, e.g. monetary policy that focuses on stabilizing the price level and the output gap (Cogley and Sargent, 2005), the absence of large shocks (Stock and Watson, 2002), or efficiency gains in inventory allocation (McConnel and Perez-Quiros, 2000).*

3 *This box is a summary and updated version of Brunhart, 2013b, Chapter 3.*

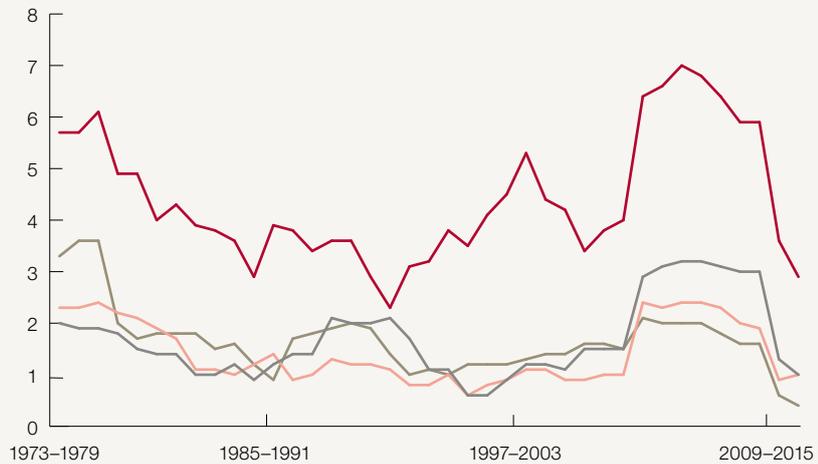
4 *Nominal GDP and (sectoral) income side figures are from Liechtenstein’s official national accounts provided by the Office of Statistics, complemented by backward estimations in Brunhart (2013a) for the years before 1998. We approximate the level-shift in the data due to the revision from ESA1995 to ESA2010. Real figures have been computed by applying the Swiss GDP deflator, since no official price index exists for Liechtenstein. Due to the monetary union with Switzerland (with the Swiss franc as common currency) along with a customs union resulting in common collection of most of the indirect taxes, price level developments are comparable across the two countries.*

5 *High volatility is typical for small nations and a stylized fact in small state economics (see for example Easterly and Kraay, 2000).*

BOX 1

- Liechtenstein
- Switzerland
- Austria
- Germany

**Figure B1.1**  
Standard deviations of annual real GDP growth rates (centered moving averages, 7y windows, percent)  
Source: Liechtenstein Institute.



which, in turn, drives overall GDP volatility in Liechtenstein. We draw this conclusion based on a growth accounting exercise using components of Liechtenstein’s GDP. We consider the generation of the income account in Liechtenstein’s national accounts:

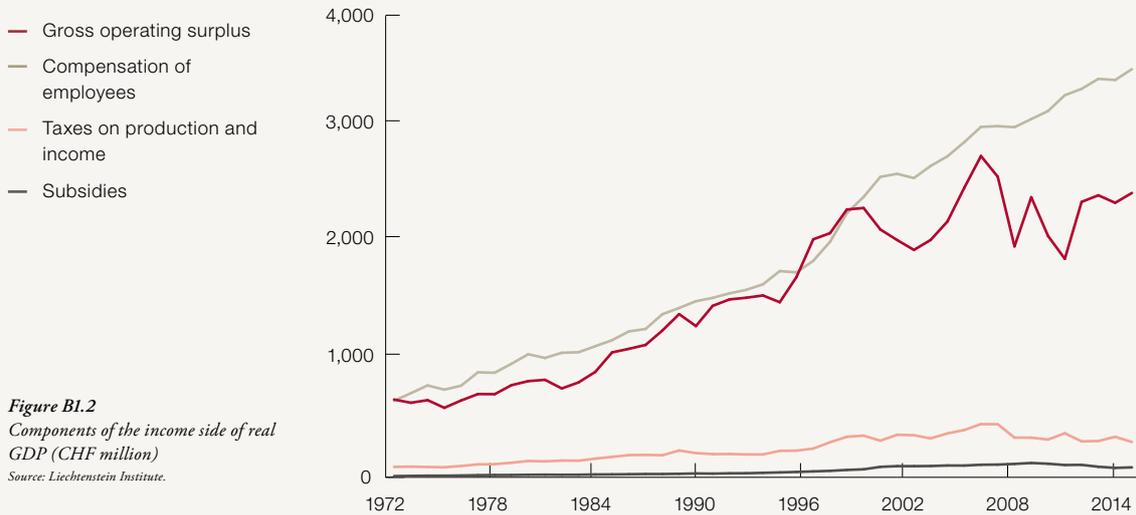
	Compensation of Employees
plus	Gross Operating Surplus
plus	Taxes on Production and Imports
minus	Subsidies
	-----
=	Gross Domestic Product
	=====

Figure B1.2 shows the development of income components of Liechtenstein’s GDP<sup>6</sup>, with compensation of employees and gross operation surplus being the two main sources of income. Since the early 2000s, however, we observe some divergence between the developments of these two components. While a slowdown in gross-operating surplus growth

can be observed, compensation of employees continued its stable growth path.

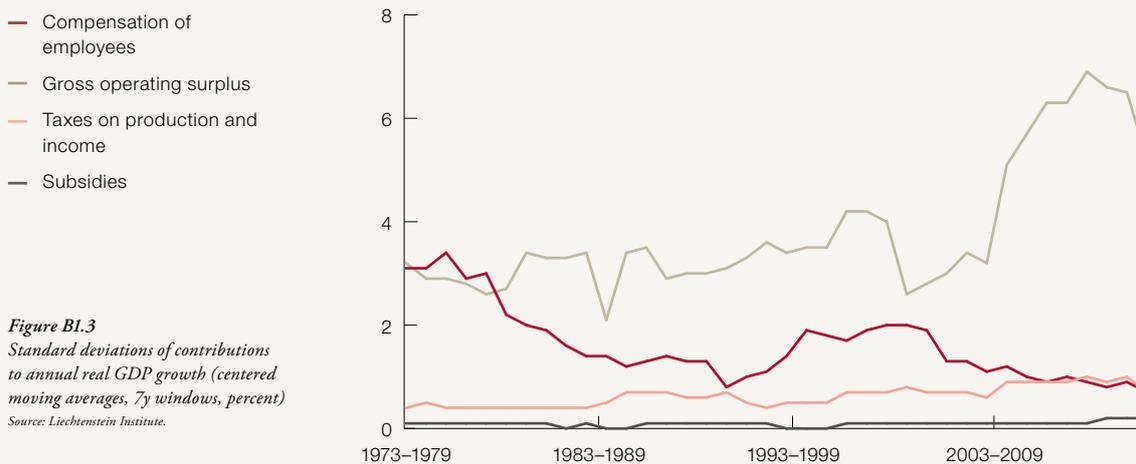
**In Liechtenstein, gross operating surplus is by far the most volatile component among the sources of generated incomes.** Figure B1.3 shows standard deviations of contributions to annual real GDP growth (centered moving averages, 7-years windows). Contributions are calculated as growth rates weighted by the component shares. Considering the development of the volatility of growth contributions of gross operating surplus and compensation of employees, a pronounced divergence can be observed. Since the 1970s, the volatility of gross operating surplus increased strongly in contrast to compensation of employees. At the volatility peak in the period 2007–2013, the total standard deviation reached 8.9%, with a contribution of 6.9 percentage points (pp) from gross operating surplus (compared to 0.9 pp from compensation of employees, 1 pp from taxes on production and income and 0.1 pp from subsidies).

<sup>6</sup> Due to the publication lag, income components are only available until 2016.



While growth rates of operating surpluses in general services are relatively stable, industry and financial services show higher variability. Figure B1.4 shows standard deviations of contributions to gross operating surplus growth by sector:

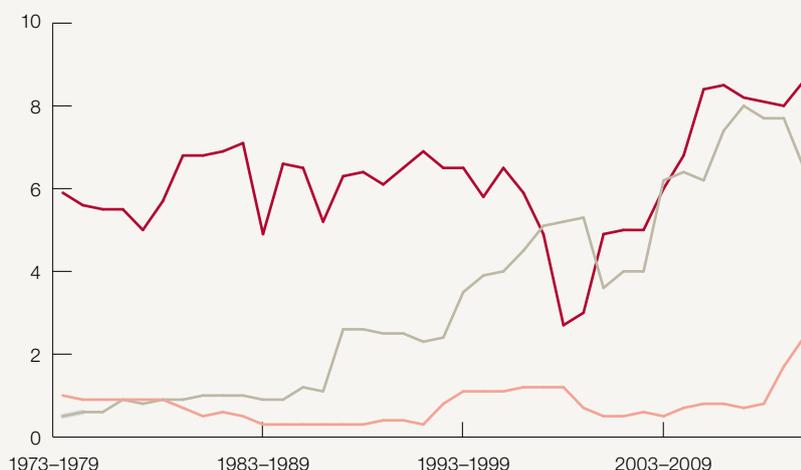
industry/manufacturing, financial services and general services.<sup>7</sup> It is striking that the standard deviations of financial services surplus' growth rates exhibit an upward trend, while no clear long-run trend is evident in industry and services.



7 Income in the sector agriculture/households is not included in the analysis.

BOX 1

- Industry/manufacturing
- Financial services
- Other services



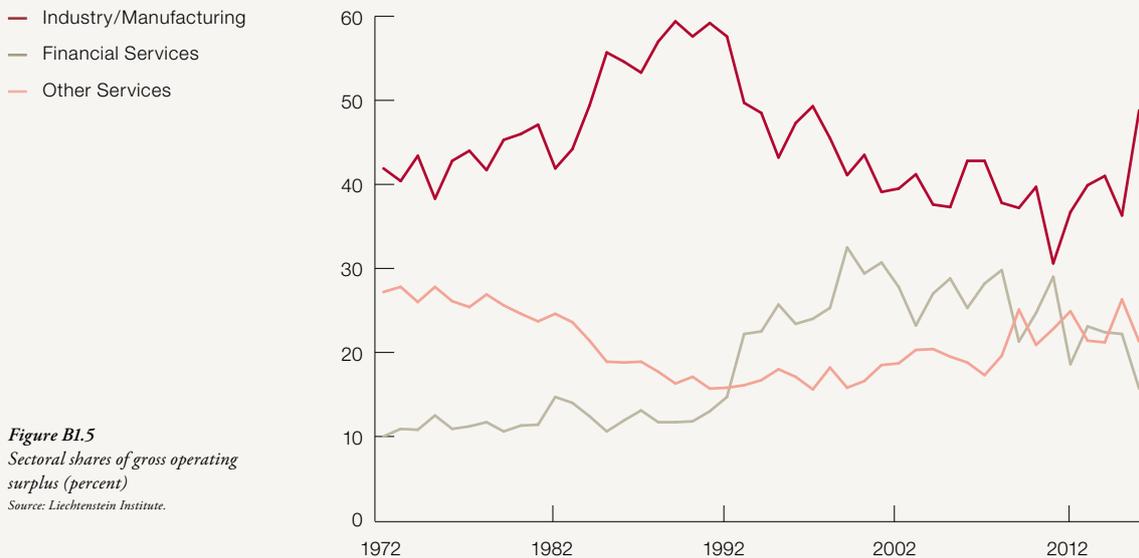
**Figure B1.4**  
Standard deviations of contributions to gross operating surplus growth by sector (centered moving averages, 7y windows, percent)  
Source: Liechtenstein Institute.

The share of the gross operating surplus generated in the financial services sector continuously increased from the 1980s until 2010. This can be seen in the upward trend in the share of financial services in overall gross operating surpluses shown in Figure B1.5. Thus, the high and until 2010 increasing volatility in gross operating surplus in financial services combined with the increasing share of financial services in overall gross operating surplus, explain the evolution of overall business cycle volatility to a large extent.<sup>8</sup> Since 2010, the share of financial services in overall gross operating surpluses has decreased, with industry/manufacturing gaining importance in recent years.

To sum up, we find a strong link between business cycle volatility on the one hand and the financial sector’s relative performance (both in terms of growth and sectoral share) on the other hand. Overall, it appears that high growth in financial sector services in the 1980s and 1990s came at the cost of higher volatility. Going back to Figure B1.1, we observe a reduction in the overall business cycle volatility in recent years. The deep structural changes<sup>9</sup> in the financial sector in the previous decade may have decelerated average growth rates, but it also had a moderating effect on the volatility of Liechtenstein’s economy.

<sup>8</sup> Alternatively, one could also consider the production side of GDP: Sectoral gross value added figures from the national accounts’ (1998–2016) support the assumption that the financial sector is the main driving force behind the high business cycle volatility.

<sup>9</sup> In addition to the shock of the financial crisis and widespread new international regulation in the financial sector, Liechtenstein’s financial service sector has faced structural changes related to the Principality’s full commitment to tax compliance and automatic information exchange.



**Figure B1.5**  
Sectoral shares of gross operating surplus (percent)  
Source: Liechtenstein Institute.

### References

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