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Switzerland's rise to a wealthy nation: Competition and contestability as key success factors

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Research Paper No. 2009/25

Switzerland's Rise to a Wealthy Nation

Competition and Contestability
as Key Success Factors

Beatrice Weder,¹ and Rolf Weder²

April 2009

Abstract

This paper argues that economic competition and political contestability are two key determinants of the successful development of the Swiss economy in the nineteenth and twentieth century. We describe how Switzerland evolved from a relatively poor country with no natural resources and net emigration in 1800 to one of the richest countries of the world two hundred years later. Based on quantitative and qualitative evidence, we argue that early internationalization, open and flexible markets as well as a high degree of competition were crucial for the development of the Swiss economy. In addition, the Swiss political system with its direct democratic elements and the implemented principle of subsidiarity created political contestability that maintained government efficiency and led to political stability throughout history. The combination of these elements seems to explain the Swiss success, but also to make it difficult for other countries to adopt.

Keywords: Switzerland, development, growth, competition, contestability

JEL classification: F43, N10, O43, O5

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Acronyms

GDP gross domestic product
GNI gross national income
GNP gross national product
HDI human development index
MNCs multinational companies
PPP purchasing power parity
WTO World Trade Organization

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1 Introduction

Today, Switzerland is mainly known for its mountains and lakes, well-functioning infrastructure and high-quality products and services. Some would associate Switzerland with chocolate, watches and cheese. Others might think of Swiss banks and multinational companies or of Geneva as the host to international organizations such as the World Trade Organization (WTO). But above all, everybody would think of Switzerland being a rich country. In fact, it has been among the richest nations of the world for many decades.

Let us imagine for a moment how Switzerland and its perspectives would have looked like about 200 years ago. The mountains and lakes were there—but there was little else. Switzerland was a poor country. Exports included mercenaries that served in foreign armies. The country had no natural resources and was exposed to many different cultures and influences that generated tensions and conflicts throughout history. There was a net emigration of people. Even after the take-off of the industrialization in the second half of the nineteenth century, the standard of living in this country remained behind that of other European countries.

What explains the rise of Switzerland? When did Switzerland stop being a laggard and become an economic success story? Are there any lessons that other countries could learn from the factors that combined to achieve rapid growth and development? We suggest that a high level of competition in goods and labour markets combined with a political system that ensured contestability provide the basis for stability and prosperity of Switzerland. We note that openness towards foreign markets and early internationalization of companies led to a high degree of competition with positive effects on innovation, productivity and flexibility. The characteristics of the Swiss political system, i.e., direct democracy combined with a high degree of federalism or subsidiarity, led to political contestability that maintained stability and decentralization.

How does our line of argument distinguish itself from other hypotheses trying to explain the economic development of Switzerland? Whereas some have stressed characteristics of the Swiss people (e.g., working ethics and entrepreneurial spirit), others mentioned the importance of individual sectors (e.g., banks or trading companies) or individual policies (e.g., banking secrecy or neutrality) or they assign an important role to chance (e.g., central location in Europe or no involvement in the First or Second World Wars).¹ While we do not think that these aspects are irrelevant, they are not key in our analysis. Our explanation is more closely related to Danthine and Lambelet (1987) and David and Mach (2006). The former consider a combination of flexible labour markets which they describe as ‘cooperative labour relations’ (Danthine and Lambelet 1987: 168) and a highly diversified economy as a key for the success—particularly in mastering the period from 1965 to 1985 characterized by severe structural changes. The latter emphasize the importance of the Swiss political institutions and argue that the various ‘institutions of conflict resolution’ and compensation (e.g., the allowance of cartels or the labour-peace agreement) as well as the many examples of ‘efficient public-private

¹ For example, see Stucki (1981). Some of these arguments are closely related to Max Weber’s (1934) ‘Protestant Ethic’ as a driving force for success.

Table 1
Switzerland: a success story?

	GDP pc PPP, avg. 1975-2005		GNI pc (current US\$) 2006		GNI pc PPP- adjusted (US\$) avg. 1975-2005		Inflation, GDP deflator (annual %), avg. 1972-2005		Unemployment (% of total labourforce), avg. 1991-2004		Human development index, avg. 1975-2005		Life expectancy at birth, avg. 1990-2005		Life satisfaction index, 2007		Average rank
	Column	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank	Rank			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Austria	18,984	5	39,590	10	18,751	6	3.56	4	3.94	3	0.8984	11	77.4	8	260	3	6
Belgium	18,297	7	38,600	11	18,464	7	4.07	6	7.99	10	0.9039	9	76.3	14	243	10	9
Denmark	19,358	4	51,700	3	19,109	4	5.44	9	6.41	7	0.9066	7	76.2	15	273	1	6
Finland	17,300	12	40,650	8	16,988	13	6.02	12	11.54	15	0.9017	10	77.0	11	257	4	11
France	17,633	11	36,550	14	17,719	11	5.17	8	10.66	14	0.9049	8	78.4	5	220	14	11
Germany	17,130	13	36,620	13	17,105	12	2.81	2	8.30	11	0.7714	15	77.1	10	240	11	11
Ireland	15,764	15	45,580	4	14,009	15	7.49	14	9.25	12	0.8817	14	76.5	12	253	6	12
Italy	17,122	14	32,020	15	16,975	14	8.83	15	10.50	13	0.8920	13	78.7	4	230	13	13
Japan	18,075	8	38,410	12	18,189	8	2.64	1	3.83	2	0.9121	6	80.5	1	207	15	7
Netherlands	18,824	6	42,670	7	19,107	5	3.63	5	5.04	5	0.9150	4	77.8	7	250	7	6
Norway	22,180	3	66,530	1	21,884	3	5.55	10	4.44	4	0.9194	1	78.2	6	247	8	5
Sweden	17,994	9	43,580	6	17,815	10	5.84	11	7.18	9	0.9134	5	79.1	3	257	4	7
Switzerland	22,547	2	57,230	2	23,731	1	2.90	3	3.32	1	0.9174	2	79.2	2	273	1	2
United Kingdom	17,846	10	40,180	9	17,882	9	7.00	13	7.03	8	0.8970	12	77.3	9	237	12	10
United States	23,081	1	44,970	5	23,073	2	4.10	7	5.56	6	0.9153	3	76.4	13	247	8	6

Sources: World Bank (2007) for columns (1) to (5), and (7).

UNDP (2007) for column (6);

White (2007) for column (8).

partnerships' (e.g., regarding energy production or banking regulation) were important factors.² In contrast to these studies, we emphasize much more the aspect of competition embedded in the Swiss economic and political system with its 'balancing capability'.³

The paper is organised as follows. Section 2 provides a brief history of the economic development of Switzerland. Section 3 presents the key success factors that, in our view, were crucial for the growth and development of the Swiss economy to its current level. This assessment is based on principles from growth theory and political economics and is influenced by our own interpretation of the Swiss historical development. Section 4 concludes and attempts to derive some general lessons for other countries.

2 A brief history of the economic development of Switzerland

We start by documenting various indicators that warrant calling the Swiss economy a success story. This assessment should be based on a longer period of recent years, given the long-term perspective of our investigation. We then focus on the timing of the economic take-off.

2.1 A success story?

Table 1 reports a number of indicators for Switzerland and other comparable economies. The first column shows gross domestic product (GDP) per capita in US dollars, adjusted to purchasing power parity (PPP), averaged over the last 30 years (1975 to 2005). This indicator describes the output or income generated by the production factors used within the country's boundary and thus tells us something about the performance of the economy, normalized per inhabitant. With US\$22,547, Switzerland ranks second behind the United States (US\$23,081) and before Norway (US\$22,180). The second and third columns report gross national income (GNI), or gross national product (GNP), per capita which describes income generated by all production factors owned by the country's residents used at home or abroad; it represents a better measure for the standard of living than GDP. Switzerland (US\$23,731) ranks first before the United States (US\$23,073) and Norway (US\$21,884) if the PPP-adjusted figures, averaged over 1975 to 2005, are taken. Note that Switzerland ranked second for nominal GNP per capita in 2006 at current US dollars, behind Norway and before Denmark.

² See David and Mach (2006: 8) who refer to Knöpfel (1988) and Brunetti (1992) regarding their assessment of the Swiss political system.

³ Note that this paper does not address the issue of whether Switzerland may have lost some dynamism during the last decades in the twentieth century and, if this were true, what should be done about it, although this issue is the focus of a heated domestic debate among politicians, representatives of the government, interest groups, think tanks, and academics. Our paper takes a much broader view of the country's development and thus can hardly provide an answer to this debate, except that we may point to some fundamental elements of the long-term Swiss success, which should not be forgotten in this debate. See, for example, Steinmann, Rentsch and Suisse (2005) for an overview of the arguments expressed by economists at a conference in 2005.

In addition to GDP and GNI, there exist many other measures that tell us something about the well-being of people living in a country. First, a low inflation rate frees people's mind from thinking about how to evade the inflation tax. Switzerland ranks third with an average inflation rate of 2.90 from 1972 to 2005, behind Japan (2.64) and Germany (2.81). Second, a low unemployment rate increases the comfort of people as they worry less about losing their current job and/or finding a new one. Switzerland ranks first with an average unemployment rate of 3.32 per cent from 1991 to 2004, before Japan (3.83) and Austria (3.94). Third, the human development index (HDI) represents a broad measure of human development in a country, and is composed of GDP, life expectancy, adult literacy and enrolment for education. Switzerland ranks second with an index of 0.9174 averaged over 1975 to 2005, behind Norway (0.9194) but ahead of the United States (0.9153). Looking only at the 2005 index, Switzerland ranks fourth behind Norway, Ireland and Sweden. Fourth, a long life may be considered as an important goal—the longer we live, the more we can take advantage of all the options of life. With respect to life expectancy at birth, Switzerland is ranked second with 79.2 years (averaged from 1990 to 2005), behind Japan (80.5) and before Sweden (79.1). The ranks of these three countries do not change if only the most recent year is taken (2005). Finally, Switzerland ranks first—ex aequo with Denmark—in the life satisfaction index (value of 273), followed by Austria (260).⁴

These top ranking positions of Switzerland indicate that the country has indeed achieved a successful stage of development until the beginning of the twenty-first century. Also note that Switzerland outperforms any of the mentioned countries in Table 1 if an average of a country's rank in all eight reported indicators is calculated. Regarding this calculated value, Switzerland ranks first with a value of two, followed by Norway with a value of five and, ex aequo, by the Netherlands, the United States, Denmark and Austria with a value of six. Thus, there is no doubt that Switzerland is indeed a success story.

2.2 When did it start?

It is interesting to note that the geographic conditions in the alpine region required the small entities to organize themselves economically and politically. Whereas these communities mainly concentrated on cattle and dairy products in the twelfth and thirteenth century, early manufacturing emerged in cloth, wool and linen in the fifteenth century associated with an increasing degree of urbanization and an expanding artisan production and commerce.⁵ After having acquired some new territory at the battles of Grandson, Morat and Nancy in the fifteenth century and having made the wealthy area of Milan a Swiss protectorate in 1512, the Swiss were defeated by the French in the famous battle of Marignano (1515). A 'perpetual peace agreement' was signed between France and the (old) Swiss Confederation in 1516 which reduced Swiss appetite for expansion.

⁴ Note that there exist many other indices of life quality or happiness that can be readily accessed on the internet. In the most recent *Economist* Intelligence Unit's quality-of-life index (2005), Switzerland ranked second behind Ireland, followed by Norway. In the 2007 worldwide quality of living survey by Mercer Human Resource Consulting, the two large cities of Switzerland, Zürich and Geneva, ranked first and second, followed by Vancouver and Vienna. Thus, these positions confirm what is reported by the above-mentioned life satisfaction index in Table 1.

⁵ See Steinberg (1996: 18) for this and the following.

The European economy began to expand and industrialize in the mid-eighteenth century. Equipped with enough capital and supported by its tradition of mercantile enterprises in combination with an expanding textile and embroidery industry, Switzerland participated in this first round of economic take-off. An example is given by Steinberg (1996: 165):

The tiny city republic of St Gallen (total population under 8,000) had sixty substantial mercantile houses during the eighteenth century engaged in the manufacture and sale of cotton, muslin and embroidery. About 100,000 spinners, weavers, calico printers and embroiderers worked for the city companies, mostly in the famous *Webkeller* (the weaving cellar) in each of the peasant houses dotted up and down the Rhine, the Thur and the Linth. East Switzerland became one of the richest and most thickly settled parts of Europe.

In 1820, Switzerland accounted for around two million citizens. Its GDP per capita at that time is estimated at US\$1,090 (see Table 2).⁶ While there existed some countries in western Europe with a lower GDP per capita (e.g., Norway or Finland), much higher values were exhibited by many countries such as the United Kingdom, the Netherlands, Belgium, Denmark or Austria. The Netherlands, for instance, accounted for a nearly 70 per cent higher GDP per capita than Switzerland. Table 2 shows the position of Switzerland in comparison to all the countries reviewed in Table 1. Based on these figures, we can say that Swiss per capita income was relatively low in the beginning of the nineteenth century in comparison with the other countries, ranking 10th in the list. Taking the estimated figures from Maddison (2003) the relative position of Switzerland improved continually throughout the nineteenth century, ranking 8th in 1850, 5th in 1870 and 3rd in 1900 and 1913. Note that at the eve of World War I, Switzerland's GDP per capita is estimated at US\$3,096, an amount that was surpassed only, albeit considerably, by the United States and the United Kingdom. These numbers should, however, be interpreted with great caution as they are estimates of a 'pre-statistical period'. In addition, Maddison (1995:135) points to the fact that, for Switzerland, 'the historical estimates are poor and weaker than for all other west European countries'.

This gives rise to an alternative and more direct analysis of the standard of living of citizens, i.e., estimations of real wages. In a new study, Studer (2007) calculates real wages for Zurich based on the Allen-approach for the period from 1800 to 1913 and compares his results with Allen's (2001) estimations of real wages of other European cities. His main findings are reported in Table 3 which is an extract from Studer (2007: Table 2) and can be summarized as follows. First, the real wage of Swiss workers, both building craftsmen and building labourers, were by far the lowest in 1800 when compared to Germany (Leipzig), Netherlands (Amsterdam), France (Strasbourg), UK (London), Belgium (Antwerp) and Spain (Madrid). Second, although they did catch up to some extent by 1910, Swiss workers before the First World War earned the third (labourers) or second (craftsmen) lowest real wages. The real wages in London were 54 per cent and 70 per cent higher, respectively. But even in Leipzig, real wages were 15 per cent higher. Note that for 2006, it is estimated that real wages were highest

⁶ These are in fact Geary-Khamis dollars. There are different methods to aggregate. One method is the Geary-Khamis method described in the *Handbook of the International Comparison Programme* (see United Nations Statistics Division, at: www.unstats.un.org/unsd/methods/icp/ipc7_htm.htm).

in Zürich on a global level, whereas real wages in London are estimated to be 36 per cent lower (see, e.g., UBS 2006: 10).⁷

Table 2
GDP per capita, 1820-1913

	1820	Rank	1850	Rank	1870	Rank	1990	Rank	1913	Rank
Austria	1,218	6	1,650	6	1,863	8	2,882	8	3,465	9
Belgium	1,319	3	1,847	3	2,692	3	3,731	4	4,220	4
Denmark	1,274	4	1,767	5	2,003	6	3,017	6	3,912	6
Finland	781	14	911	13	1,140	14	1,668	13	2,111	14
France	1,135	8	1,597	7	1,876	9	2,876	9	3,485	8
Germany	1,077	11	1,428	9	1,839	7	2,985	7	3,648	7
Ireland	877	12			1,775	10			2,736	11
Italy	1,117	9	1,350	10	1,499	12	1,785	12	2,564	12
Japan	669	15	679	14	737	15	1,180	14	1,387	15
Netherlands	1,838	1	2,371	1	2,757	2	3,424	5	4,049	5
Norway	801	13	956	12	1,360	13	1,877	11	2,447	13
Sweden	1,198	7	1,289	11	1,662	11	2,561	10	3,096	10
Switzerland	1,090	10	1,488	8	2,102	5	3,833	3	4,266	3
United Kingdom	1,706	2	2,330	2	3,190	1	4,492	1	4,921	2
United States	1,257	5	1,806	4	2,445	4	4,091	2	5,301	1
Average	1,157		1,534		1,929		2,886		3,440	

Note: Amounts given in 1990 International Geary-Khamis dollars.

Source: Based on data from Maddison (2003).

Table 3
Real wages in European cities, 1800-1910
Indices: Zurich = 100

	1800		1850		1910	
	Craftsmen	Labourers	Craftsmen	Labourers	Craftsmen	Labourers
Zurich	100	100	100	100	100	100
Leipzig			113	94	115	114
Amsterdam	210	242	111	97	131	129
Strasbourg	173	215	166	117	111	96
London	215	224	199	137	170	154
Antwerp	224	203	167	114	147	109
Madrid	147	111	170	98	86	66

Source: Studer (2007: 19).

Based on this additional analysis Studer (2007) concludes:

For the time being, this analysis concludes that while the Swiss economy as a whole improved early and was already among the most successful around 1900,

⁷ It is interesting to note that Swiss *nominal* wages increased considerably, more than in the other countries such as France, Belgium or the Netherlands, from 1885 to 1910; but real wages did not catch up because of steep price increases in the country. In particular, wages of (unskilled) labourers increased relatively more than those of (skilled) craftsmen during this period (see Studer 2007: 11 and 18).

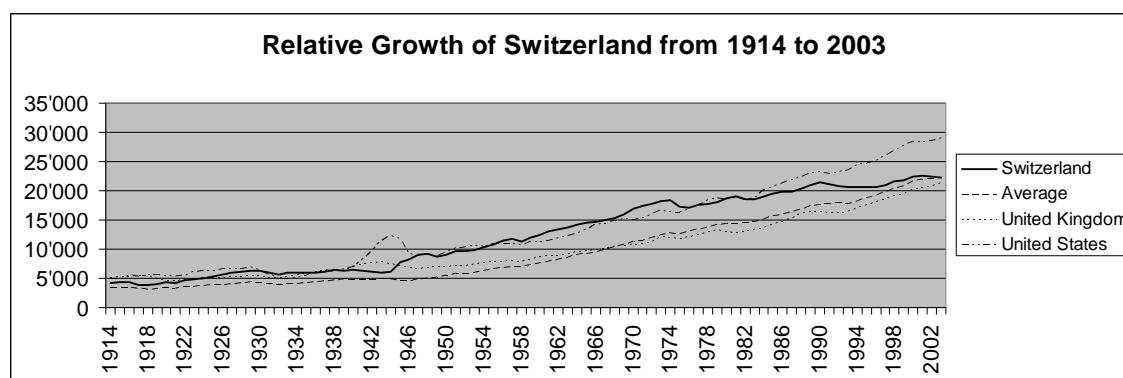
up to the First World War its workers benefited considerably less from economic growth than their colleagues in many other European countries. The rise of Swiss living standards to take a top position internationally was clearly a phenomenon of the short twentieth century.

Of course, also the figures in Table 3 have to be interpreted with caution as they reflect individual cities and are calculated for certain professions only. Thus, there remains some puzzle with respect to the question when did Switzerland catch up with the relatively rich European countries in terms of its standard of living.

The development of GDP per capita from 1914 to 2003 is captured by Figure 1. Switzerland surpassed the United Kingdom in the 1920s and the United States in the 1950s becoming number one thereafter. However, the United States caught up in the second half of the 1980s and became again the richest country, as measured by Maddison's (2003) GDP per capita. Note that relative to the average GDP per capita of the countries shown in Table 3, Switzerland increased its total real income or output in the period from the Second World War up to the mid-1970s, but then lost ground during the last 25 years of the twentieth century.

We have emphasized that in many ways Switzerland was not predestined to become a success story. Without the benefit of hindsight, about 100 years ago any observer, who had to make a forecast of which country was bound to become richer and was given a choice between Uruguay or Argentina and Switzerland, would probably have gone for the former two as a matter of course.⁸ Without any natural resources and always at the fringes of large empires, Switzerland had little going for it. And yet, its rise from a poor country to one of the wealthiest nations of the world took place in a relatively short time. We now turn to the key success factors.

Figure 1
GDP per capita, 1914-2003



Note: These are International Geary-Khamis dollars.

Source: Based on data from Maddison (2003).

⁸ Note that in 1870, Uruguay had about the same GDP pc as Switzerland. In 1900, Argentina's GDP pc was higher than Uruguay's, approximately 30 per cent lower than Switzerland's, but quickly growing. See Maddison (2003).

3 Deep determinants of growth and four success factors

We suggest that the Swiss experience of fast growth can mainly be explained by a combination of two key factors, i.e., economic competition (which promoted efficiency and encouraged innovation) and political contestability (which stabilized an efficient system of checks and balances). Both factors have been studied in the recent literature on economic growth and political economics, and tend to affect the long-term development of a country at a fundamental level. They seem more important than certain types of fiscal or monetary policies or the size of individual sectors which, in turn, are endogenous to the interaction of more fundamental determinants and institutions of growth.

The quest for the deep determinants of economic growth has intensified over the last two decades spurred by the advances of endogenous growth theory and by the empirical evidence of large differences in performance across countries. The main challenge has been (and remains) to reduce the Solow residual, which is often called the ‘extent of our ignorance’ since it contributed the largest part to ‘explaining’ growth over time as well as growth differences across countries.⁹ Put differently, our understanding of the role of factor-accumulation (labour, capital and human capital) in the growth process is much more advanced than our understanding of the determinants of efficiency, productivity growth and innovation.

A high degree of competition is one possible avenue for explaining productivity growth and innovation. The famous Schumpeterian view of ‘creative destruction’ suggests that firms will innovate under the constant pressure of competition. Firms have a strong incentive to stay on their toes and to constantly improve the quality of their products, their processes and to expand their reach into new markets because this is the only way to improve profits. With competitive markets the entry of new competitors will quickly erode these profits, which again forces incumbents to either innovate or die. Of course, temporally limited rents of successful innovators may be necessary to cover their fixed innovation costs and thus be granted by patent laws in some industries; but without competition the innovation process quickly becomes obstructed.¹⁰ In the empirical literature a high degree of market competition has, therefore, been found to be an important determinant of growth (see e.g., Aghion and Griffith 2005).

Another branch of the growth literature, which is relevant for our interpretation of the Swiss case, is the one emphasizing the role of institutional quality and stability.¹¹ The argument is that institutions that provide stability and security of property rights are a necessary condition for growth. Conversely, an environment characterized by sudden changes in power, by constant fear of expropriation and uncertainty about the possibility to enforce contracts will stifle incentives to invest and innovate. It appears that throughout history, discretionary regimes have been more frequent than systems of rule of law. Therefore, scholars such as Douglass North have suggested that the rise of the western world can largely be explained by the emergence of political systems which

⁹ See e.g., Weil (2005) for an overview of the literature on fundamental growth determinants.

¹⁰ See also Moser (2005) who studies innovations in the nineteenth century and finds that patent laws seem to affect the direction of technical change.

¹¹ See, for example, North (1990, 1991) and Acemoglu, Johnson and Robinson (2005).

controlled the abuse of power and secured property and contract rights. This line of argument has also received attention from researchers who have investigated the causes of cross-country differences in growth. They suggest that these differences are in part due to differences in the stability of property and contract rights and more generally in the credibility of the political system.¹²

In the following, we suggest that the main lessons from the Swiss growth experience can be condensed into four key success factors. Two of these relate to a competitive environment in goods and factor markets and the other two to a high degree of contestability in the institutional and political setting.

3.1 Openness leads to early internationalization

The small size of the domestic market forced Swiss firms to internationalize from the start. In 1920, many Swiss industries exported extremely large shares of their domestic production, such as chemicals (90 per cent), watches (98 per cent), silk (95 per cent), stitchery (95 per cent) or chocolate (80 per cent) (Himmel 1992: 2). Also, Swiss firms heavily increased their foreign direct investments at the end of the nineteenth century. In 1890, six out of ten multinational companies (MNCs) from Belgium, Denmark, Netherlands, Sweden and Switzerland were located in Switzerland.¹³ In 1914, this number equalled 29 out of 57 MNCs. The high degree of openness is still clearly visible today, and can be demonstrated by a number of different measures. Table 4 gives an overview of the current internationalization of the Swiss economy in comparison with other countries. First, the ‘global trade intensity’ measured as exports plus imports of goods and services divided by GDP shows that Switzerland, ranking 7th, is found in the middle range of the 14 countries considered. This should not come as a surprise as smaller countries are expected to show higher trade intensity.¹⁴ Second, Switzerland ranks 3rd in the global income exchange intensity that adds income payments and receipts regarding internationally traded factors of production relative to GDP. Third, the share of foreigners measured as the stock of foreign born residents relative to total population equalled 22 per cent in 2005 which ranks Switzerland in first place. Fourth, global migration intensity is calculated as emigrants plus immigrants in percent of total population which, again, puts Switzerland on rank 1.

Fifth, Switzerland is an important source country of foreign direct investment which, if the stock is taken in relation to GDP, ranks the country in first place; it confirms the considerable direct investments Swiss firms made and accumulated throughout history. Finally, the globalization index published by KOF in 2008 which takes into account many ‘economic, social and political dimensions of globalization’, places Switzerland in 4th position, behind Belgium, Austria and Sweden. Taking the average of all available ranks in Table 4, Switzerland, among the countries considered, appears as the nation with the highest degree of internationalization at the beginning of the twenty-first century.

¹² See Acemoglu, Johnson and Robinson (2005), Weder (1993), Borner, Brunetti and Weder (1995) and Brunetti (1998).

¹³ See Schröter (1993: 31). See also Enright and Weder (1995) for an analysis of the internationalization of a number of industries throughout history.

¹⁴ See Weder (2007) for an assessment, taking into account the country size.

Table 4
Internationalization of the Swiss economy

Column	Population	GDP	Global trade		Global income		International		Global migration		Foreign direct		Rank (stock relative to GDP)	Globalization		Average of all available ranks
	(in '000)	in US\$ billion	intensity	Rank	exchange intensity	Rank	migration stock (% of pop.)	Rank	intensity	Rank	investment, stock owned abroad as:			index	Rank	
	2005	2005	2002	Rank	2002	Rank	2005	Rank	2000	Rank	US\$ billion 2003	% of GDP 2003		2005	Rank	
Austria	8,059	253.1	103.3	4	13.8	8	15.0	2	1.8	2	59.1	23	9	91.38	2	4.5
Belgium	10,348	301.9	164.1	2	68.2	1	6.9	12	1.2	10	na	na	na	92.09	1	5.2
Denmark	5,387	211.9	83.0	5	15.8	6	7.2	11	1.8	2	77.07	36	7	88.42	5	6.0
Finland	5,210	161.9	69.0	8	13.7	9	3.0	14	0.6	12	68.7	42	5	84.65	9	9.5
France	59,725	1,757.6	52.2	13	10.3	11	10.6	7	na	na	643.4	37	6	85.38	8	9.0
Germany	82,551	2,403.2	67.5	10	10.7	10	12.3	6	1.8	2	622.5	26	8	83.01	10	7.7
Ireland	3,947	153.7	168.7	1	63.4	2	14.1	3	1.7	5	33.53	22	10	79.82	11	5.3
Italy	57,646	1,468.3	53.0	12	8.5	13	4.3	13	0.5	13	138.88	9	13	79.44	13	12.8
Japan	127,210	4,300.9	21.1	15	2.9	15	1.6	15	0.4	14	335.5	8	14	60.91	15	14.7
Netherlands	16,215	511.5	120.1	3	19.7	5	10.0	8	1.3	8	384.4	75	2	88.4	6	5.3
Norway	4,560	220.9	68.5	9	9.5	12	7.4	10	1.4	6	40.64	18	12	79.75	12	10.2
Sweden	8,956	301.6	81.5	6	15.0	7	12.4	5	1.0	11	189.28	63	4	90.02	3	6.0
Switzerland	7,344	320.1	81.0	7	26.7	3	22.3	1	2.8	1	344.1	107	1	88.6	4	2.8
United Kingdom	59,280	1,794.9	55.4	11	21.7	4	9.0	9	1.4	6	1128.58	63	3	86.67	7	6.7
United States	291,044	10,948.6	23.4	14	5.0	14	12.9	4	1.3	8	2069.01	19	11	76.76	14	10.8

Sources: Weder (2007) for columns (1) to (4);
World Bank (2007) for columns (5) and (6);
KOF (2008) for column (8).

Another sign of openness is that Switzerland resisted protecting declining industries. Examples are the textile industry, the embroidery industry or, more recently, the textile machinery industry—industries that were very important in the economy at the time. The textile industry underwent a brutal structural change over the first half of the twentieth century and has virtually disappeared.¹⁵ However, there are exceptions to this generally high degree of integration into the world economy. In agriculture, Switzerland has become one of the most protectionist countries of the world. In some areas of public services (e.g., transportation, electricity) the Swiss decided not to deregulate as much as other countries, which made these areas difficult for foreign competitors to access. However, it is widely recognized that consumers are paying a high price for these policies and that these areas may, to some extent, become a drag on the economy's development. In these protected areas the stabilizing political system (see section 3.3) provides substantial power to veto players and thus may prevent reforms and adjustments.¹⁶

3.2 Openness and competition lead to flexible factor markets

The small size of the country and its location in the centre of Europe not only promoted an early internationalization of Swiss firms but also led to a natural high degree of immigration and emigration. Switzerland benefited from immigrants and the knowledge they brought during the early phases of the industrialization: the Huguenots in Geneva created the watch industry and chemists from abroad moved to Basel and promoted the dyestuff industry. Some of the largest multinationals were founded by immigrants (e.g., Henri Nestlé, Charles Brown and Walter Boveri). Other examples are Cailler and Suchard who benefited from foreign knowledge in the nineteenth century. Foreigners accounted for 5 per cent of the population in 1860, increased to 15 per cent already in 1910 before declining to 6 per cent in 1950 (Ritzmann-Blickenstorfer 1998). After the Second World War, the share of foreigners in Switzerland rose steadily to exceed 20 per cent in 2000. The share of foreigners living in Switzerland is currently high by comparison with other countries, even when compared with small countries, as shown by Table 4. Most interestingly, the intensity of inward and outward migration is extremely high in Switzerland and so is the extent of border commuting which is reflected in Switzerland's high net income payments to neighbouring countries for labour.

This contrasts with the view that Switzerland has very restrictive immigration policies, a view mainly due to the experience of the 1970s, when a large number of the so-called 'guest workers' returned to their countries of origin. Danthine and Lambelet (1987: 163) argue that this sequence in the country's history is largely misunderstood, as Switzerland, in fact, did not 'export its unemployment' by firing and deporting foreign workers: 'Indeed, because of a high turnover rate of guest workers, the largest part of the decrease in foreign population was achieved by not replacing those who had left voluntarily'. However, the form of immigration control, which favoured short-term employment, probably was damaging, as it distorted incentives and led to an influx of

¹⁵ Another example is given by Danthine and Lambelet (1987: 169) who report that from 1965 to 1975, employment in the banking sector increased by 40 per cent while it declined in the watch industry by almost 45 per cent.

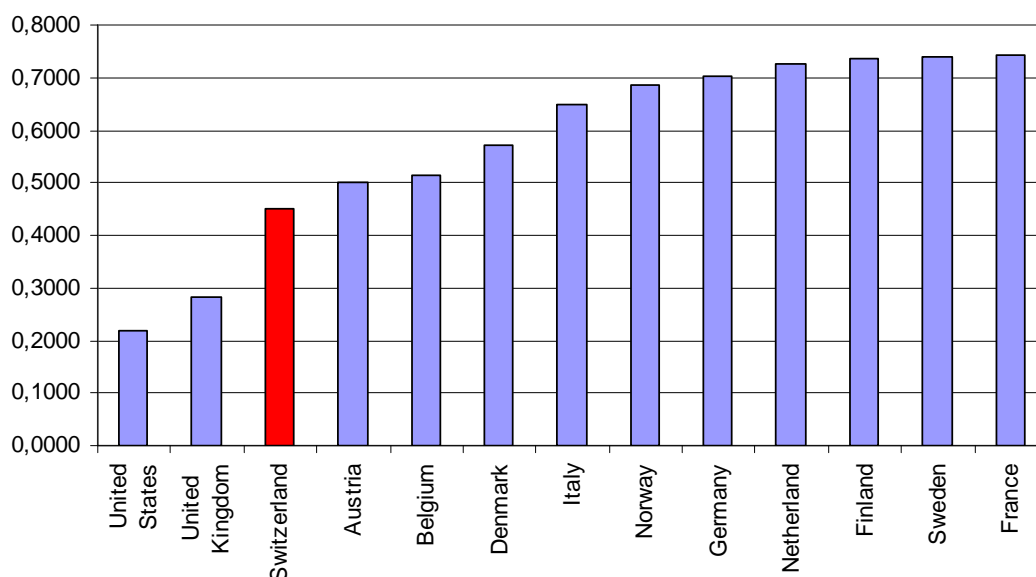
¹⁶ This argument has been emphasized by, for example, Borner, Brunetti and Straubhaar (1990).

low-skilled, while preventing the immigration of high-skilled people. The bilateral negotiations with the EU have brought certain liberalization and the higher inflow of highly qualified and skilled immigrants from the EU contributed to the good economic performance of the first years of the twenty-first century, as many believe.

A second advantage of Switzerland is that it enjoys greater labour market flexibility than many other European countries. By comparison with its neighbouring countries, wage bargaining is decentralized, minimum wages are few and rarely binding, labour conflicts are solved at the company level and generally do not develop in big country-wide strikes or the like. Labour protection laws are flexible, giving employers the possibility to terminate at short notice; firing costs are low and consequently the labour market reaction to a downturn is fast and so is the willingness of companies to hire new people once conditions improve (see e.g., Straubhaar and Werner 2003: 72). This view is confirmed by Figure 2 in which we interpret the so-called employment law index as a measure of labour market inflexibility. As explained by Botero et al. (2004: 1353), their employment law index is calculated based on four indices measuring the costs of (i) alternative employment contracts, (ii) increasing hours worked, (iii) firing workers and (iv) dismissal procedures.¹⁷ Figure 2 shows that the labour market inflexibility index is relatively low in Switzerland in comparison to the countries we have been looking at in this paper. In fact, the index is only lower in the United States and the United Kingdom.

One interesting question, which is beyond the scope of this paper, is why Switzerland was able to keep flexible labour markets. Presumably, most countries at some stage had

Figure 2
Labour market inflexibility based on the employment law index



Source: Botero et al. (2004: 1362-3).

¹⁷ Botero et al. (2004: 1353) confirm, in our view, our interpretation of their index: ‘Our index of employment laws, more so than other indices, reflects the incremental cost to the employer of deviating from a hypothetical rigid contract, in which the conditions of a job are specified and a worker cannot be fired. This index is thus an economic measure of protection of (employed) workers, and not just a reflection of legal formalism’.

little labour regulation and over the course of the twentieth century gradually provided more and more protection to the insiders of the labour market and/or employed labour. How did Switzerland avoid this protectionist process? Part of the answer could be that the country avoided some of the worst regulations by historical accident. For instance, Switzerland's public servants never enjoyed extensive benefits as, for example, the ones granted to German public servants. Therefore, when the Swiss moved to abolish the status of a public servant in the second half of the 1990s, this reform was accepted and implemented with little noise.¹⁸ In Germany, for example, such a reform would seem politically impossible to implement. This brings us to the second part of the story on how the Swiss political system interacts with the economic system and serves as a stabilizing force.

3.3 A contestable political system leads to political stability

One way of describing the Swiss political system is to note that it is highly contestable simply because there is a large number of veto players that can easily enter the political system. On the one hand, the cantons have a very strong political position: not only do they have the voting powers in the second chamber of parliament, but they also have right to make initiatives and referenda, and a popular vote necessitates both the majority of the population as well as the majority of the cantons. Political power is equally distributed among the cantons, which means that some small (mountainous) cantons can be decisive players in any vote.

The most important and distinguishing feature of the Swiss political system, however, is direct democracy. Any group of citizens, which has the organizational power to collect 50,000 signatures is able to call a referendum (a popular vote) on any law that is passed by the parliament. Once a referendum is introduced, the law in question has to be put to a popular vote which can be costly, time consuming and involve high uncertainties about the outcome. Therefore, the political parties in parliament try to anticipate the concerns of interest groups and to negotiate a compromise *ex ante*. The instrument of the referendum is important in understanding why the Swiss form of democracy evolved into a mechanism that is highly trained to find compromises and on incorporate the concerns of all potential veto players. The result is a very stable system. We call this important element 'contestability' because of its analogy to contestable markets that are highly vulnerable to *potential* entry of firms. This threat constrains the behaviour of the incumbents (Baumol 1982: 4).

Relating this back to the language used in the growth literature: the Swiss political system restricts the abuse of power and guarantees a high degree of stability and predictability of property and contract rights. Standard indicators of the quality of institutions document the good performance of the Swiss political and legal system particularly in terms of 'political stability' and 'rule of law'. The Swiss position in these and other governance indicators is shown in Table 5. Note that the numbers reflect the

¹⁸ Merzyn and Ursprung (2005: 38) mention, as a side point, that measures of granting public schools more autonomy such as 'delegating hiring and dismissal of teachers to the school management, thereby abolishing the civil servant status of public school teachers (...) were politically rather uncontroversial'. The parliament in the canton of Zurich decided to voluntarily put the new law with many more and politically more important elements to a popular referendum which was accepted by 60 per cent of the voters.

rank of a country among all the countries considered where ‘100’ corresponds to highest and ‘0’ to lowest rank. It is worth mentioning that also other industrialized countries are able to achieve good performance on most of these indicators with political systems that lack the unique features of Switzerland’s direct democracy. However, these indicators were mainly constructed to measure differences across the world. Therefore, the differences among industrialized countries may be somewhat underestimated.

One indication that the stability of the Swiss institutions is of a different quality from that of other rich countries is apparent in the so-called ‘interest rate island’, the fact that yields of Swiss-Franc assets (in particular, money market assets and bonds) have been systematically lower than the gains of other major currencies (even after controlling for Swiss Franc appreciation). In other words, investors have been willing to forego some return, i.e., pay a higher price, to hold Swiss-Franc assets. It has been argued by Kugler and Weder (2004, 2005), that this interest rate bonus could be explained if investors believe that the Swiss Franc (and presumably the Swiss institutions more in general) could behave differently than the rest of the world in times of crises.

Table 5
Indicators of governance

	Percentile rank (0-100)					
	Rule of law	Political stability	Government effectiveness	Regulatory quality	Voice and accountability	Control of corruption
Italy	60.0	82.2	91.1	94.6	96.2	94.7
France	89.5	69.2	92.4	87.8	94.7	91.3
Japan	90.0	74.0	100.0	99.0	100.0	99.0
Belgium	91.0	99.0	97.6	97.1	98.1	100.0
United States	91.9	61.5	85.8	82.9	92.3	91.7
United Kingdom	93.3	75.0	90.5	91.2	95.7	93.2
Netherlands	93.8	56.3	67.3	74.1	86.5	64.1
Germany	94.3	85.1	88.2	87.3	75.5	90.3
Sweden	96.7	70.7	95.3	95.6	99.0	96.1
Austria	97.1	91.8	98.1	90.7	98.6	96.6
Finland	98.1	88.0	96.7	92.7	96.6	97.6
Switzerland	98.6	98.6	98.6	93.2	99.5	97.1
Norway	99.0	61.1	94.8	98.0	92.8	93.7
Denmark	99.5	57.7	92.9	93.7	83.7	89.3

Notes: Rule of law: the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.

Political stability and absence of violence: perception of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism.

Government effectiveness: the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies.

Regulatory quality: the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Voice and accountability: the extent to which a country’s citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

Control of corruption: the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as ‘capture’ of the state by the elites and private interests.

Source: World Bank (n.d.)

World Bank (2007: 2) for indicator definitions

3.4 Competition among cantons for footloose factors increases state efficiency

Switzerland was constituted in a process in which an increasing number of small cantons joined the confederation. The process took several centuries and created a country in which decisionmaking remained highly decentralized. The strong position of the cantons in the old confederation led to a federal structure in the 1848 constitution with a relatively weak central government. The high degree of federalism can be demonstrated most easily in the area of fiscal policies and competencies.

Appendix 1 compares the allocation of competencies of various government tasks at different levels of jurisdictions in Switzerland and in Austria, another alpine country. A review of the table indicates that, in general, the degree of subsidiarity in a number of areas is larger in Switzerland, i.e., competence is higher at the communal and cantonal level than in Austria. Also, in Switzerland, the competence to levy taxes and to decide expenditures is allocated mostly to the local level. By comparison, the Austrian tax system is much more centralized and taxes are shared between all three levels and expenditures are more often made at the federal level than in Switzerland.

Another notable characteristic of the Swiss fiscal system is the high degree of tax competition. Table 6 reports the development of the indices of the total tax burden for the Swiss cantons from 1990 to 2006. The numbers are interesting for two reasons. First, there is considerable difference between the levels of the cantonal tax rates. Note, for example, that taxes were 37 per cent higher in Uri than on average in 2006, whereas they were almost 50 per cent below average in the canton of Zug. Thus, these numbers exemplify the high degree of tax competition among cantons. Second, taxes do change over time. Take, for example, the case of Basel-Stadt and Basel-Land, two neighbouring cantons. Their taxes were only about 2 per cent apart in 1990. However, taxes in Basel-Land fell whereas those in Basel-Stadt tended to increase in the following years with some convergence thereafter. Table 6 thus also seems to show that cantons do in fact compete by changing their behaviour and also by reacting to each other.

While it is often argued that tax competition leads to a race to the bottom and that public goods will no longer be provided at the desired level, the Swiss experience suggests that tax competition does not necessarily result in a low provision of public goods. Rather, it seems that tax competition has increased the incentives for local governments to improve efficiency and to listen carefully to their constituency.¹⁹ The Swiss experience suggests that one benefit of federalism is tax competition and fiscal discipline and a pressure to keep the state efficient and small. In Switzerland, public expenditure of the general government was about 35 per cent of GDP in 2007, which is among the lowest shares among the OECD governments, as shown by Figure 3. If the share of public expenditures in GDP is considered as a proxy for the level of state involvement, then Switzerland clearly has a more light-handed government than its immediate neighbours and other continental European countries. Note that government involvement has been reduced in some countries (e.g., Sweden, Denmark, Finland and Norway in the last years), whereas it has further increased in Switzerland and other countries with a traditionally low government share. Thus, there seems to be some convergence of the levels observed.

¹⁹ See, e.g., Feld and Kirchgässner (2001, 2003). See also Afonso, Schuknecht and Tanzi (2005) and Eichenberger (1999).

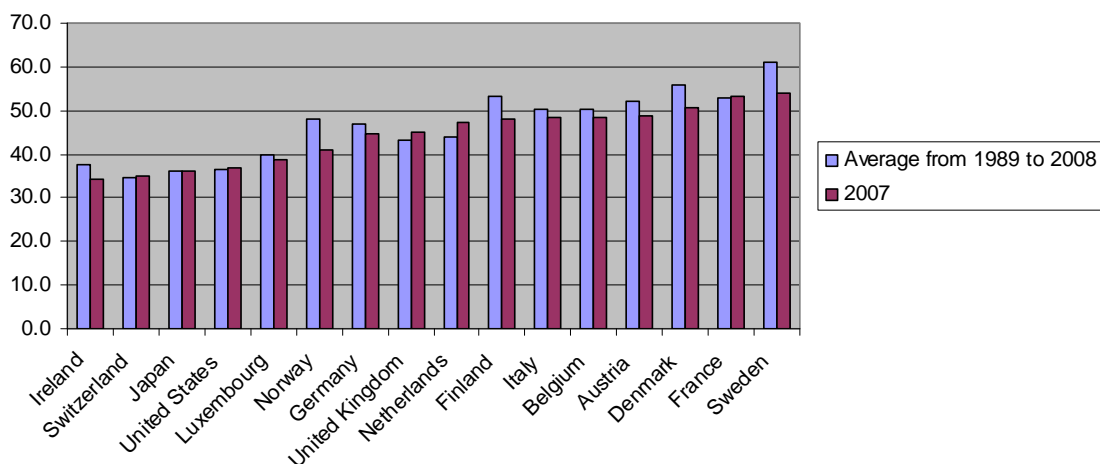
Table 6
Index of total tax burden in Swiss cantons over time

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Zurich	84.8	82.9	83.4	83.2	83.1	82.9	82.2	80.3	80.0	83.6	83.3	87.1	90.2	90.0	91.3	92.2	85.8
Berne	113.8	117.8	117.6	122.6	120.9	117.8	117.9	120.4	120.3	123.9	124.2	115.1	112.4	114.4	113.7	115.7	121.0
Lucerne	122.9	106.1	102.6	106.7	108.1	115.6	115.1	116.6	116.8	116.5	117.0	120.5	124.9	124.3	126.0	114.5	115.2
Uri	125.5	134.4	131.3	102.3	98.1	92.0	91.7	88.7	88.5	93.0	95.0	114.3	133.8	137.9	145.9	149.3	137.8
Schwyz	78.4	86.9	87.0	88.3	84.8	87.7	86.1	82.7	81.3	78.5	75.3	65.1	63.0	64.5	64.1	68.3	68.5
Obwalden	114.0	126.9	121.1	120.8	116.5	118.2	117.0	116.0	116.9	108.1	108.2	123.2	145.2	143.1	150.3	155.8	136.0
Nidwalden	82.2	84.6	81.9	80.7	79.1	74.2	73.1	72.2	70.3	71.2	71.1	75.0	76.1	77.0	75.2	75.7	78.0
Glarus	122.1	111.9	109.8	112.2	110.8	115.5	115.2	111.9	108.1	97.7	99.1	105.8	111.9	116.6	123.6	125.0	127.5
Zug	56.9	60.4	57.6	58.5	57.8	57.3	56.9	57.3	57.3	58.7	58.2	50.7	50.8	52.3	51.7	52.7	52.4
Freiburg	117.0	124.7	119.4	126.4	124.2	130.6	130.5	124.8	124.8	115.7	116.4	127.0	133.2	135.7	130.3	131.3	124.3
Solothurn	107.8	106.3	115.4	102.9	107.8	96.8	98.7	99.4	100.3	98.7	100.1	112.2	113.1	115.9	111.6	110.3	112.8
Basel-Stadt	102.6	105.1	110.6	109.7	113.0	110.3	110.5	111.9	112.1	110.4	111.3	118.6	119.5	116.8	113.5	112.1	115.4
Basel-Landschaft	100.0	82.6	82.3	90.0	90.6	92.3	91.6	93.2	93.0	90.3	91.1	93.6	95.8	98.2	94.1	93.9	96.2
Schaffhausen	101.2	105.5	102.8	107.2	105.0	104.4	103.7	99.5	99.0	100.0	101.4	109.5	113.2	114.4	114.9	116.8	112.2
Appenzell A. Rh.	95.7	106.1	106.2	104.4	101.2	107.8	108.4	106.2	106.1	105.2	105.8	105.6	108.6	110.3	114.4	118.7	117.9
Appenzell I. Rh.	116.1	107.7	109.1	116.1	109.9	100.6	97.7	97.5	94.3	88.8	89.1	85.4	94.7	96.5	97.2	97.7	100.3
St. Gallen	90.0	85.2	87.1	95.6	94.7	98.2	97.7	99.2	100.0	101.5	102.3	100.5	101.2	104.7	108.1	110.8	113.4
Grisons	104.4	106.4	101.7	98.8	98.6	102.2	102.1	90.5	90.6	91.6	92.1	103.2	111.1	114.9	116.5	120.3	118.8
Aargau	100.7	100.1	96.6	98.4	96.2	98.6	98.5	97.3	96.6	96.2	96.5	88.4	82.6	84.6	84.5	86.8	90.2
Thurgau	86.3	99.3	95.3	88.8	92.3	97.1	97.8	101.0	101.5	105.1	106.0	108.6	101.8	101.4	102.5	82.7	84.0
Ticino	102.5	104.8	101.8	105.4	105.6	96.2	96.3	96.9	97.6	95.0	90.4	84.4	83.2	71.7	70.8	73.1	74.3
Waadt	109.0	107.6	104.1	107.9	109.5	108.1	108.1	109.4	109.3	108.9	109.8	111.9	110.2	102.7	102.2	102.6	107.2
Valais	143.0	147.6	140.8	119.6	116.7	124.9	124.6	130.1	130.0	122.1	123.0	121.2	128.2	135.6	131.5	134.1	115.9
Neuenburg	123.4	129.6	135.8	126.4	130.1	125.5	125.7	124.4	126.4	125.3	126.7	122.6	126.1	128.2	128.8	132.5	133.7
Geneva	108.0	111.3	115.9	112.4	114.1	110.9	112.7	113.3	113.5	107.0	103.8	96.2	92.0	93.1	95.7	95.2	97.5
Jura	135.1	137.4	142.8	134.7	132.1	127.0	130.8	130.5	131.8	124.9	126.3	132.0	131.0	135.9	138.1	121.8	125.1

Note: This index takes into account taxes in income and wealth of individuals, taxes on profit and capital of firms, as well as on vehicles.

Source: Federal Statistical Office (2008: Table 18.2.2.3.2).

Figure 3
Government involvement relative to GDP
General government total outlay in % of GDP



Note: Data refer to the general government sector, which is a consolidation of accounts for the central, state and local governments plus social security. Total outlays are defined as current outlays plus capital outlays.

Source: OECD Economic Outlook 81 database.

The Swiss experience shows that competition between different states for mobile factors of production provides incentives for the efficient provision of public services, rather than leading to a race to the bottom. And the institutional competition also fostered institutional innovation. Rather than uniform solutions, flexible, local and diverse solutions have emerged and these have served the Swiss economy well.

4 Conclusions and lessons for other countries

In this paper we have suggested that the Swiss growth experience can be understood, on the one hand, in terms of a high degree of competition and the resulting flexibility and innovation in the economic sphere, and on the other hand, in terms of a high degree of contestability in the political sphere resulting in an efficient and stable political environment. Certainly there were important historical and geographical incidents that promoted both factors. However, it would be too simplistic to explain everything with geography, topology and chance. There are other small countries in Europe or Central Asia that did not develop well or at least not as well as Switzerland.

Some puzzle remains as to whether the Swiss catching-up with respect to economic output and standard of living in Europe happened mainly in the second half of the nineteenth century up to the First World War or thereafter. Our analysis suggests that the roots of the successful development go back to the nineteenth century with the creation of the Swiss confederation in 1848, the Confederatio Helvetica, and the attraction of a number of entrepreneurs and specialists who promoted the domestic and international expansion of many firms in various industries. This early internationalization of Swiss industries increased the country's GDP in the nineteenth century absolutely and relatively to other European countries and raised the standard of living mainly thereafter in the twentieth century. It seems that economic competition through a high degree of internationalization, openness and flexibility really paid off in

the twentieth century in conjunction with the contestable political system that helped to balance interests and to maintain economic flexibility.

In our view, some elements of the experience of Switzerland can and should be copied by other countries: open and flexible markets are among these. This includes access of foreign goods and services to domestic markets, but also the free mobility of people in form of migration and border commuting as well as a high degree of labour market flexibility. Other elements may also appear attractive: the elements of direct democracy (especially the facultative referendum) and of federalism (e.g., tax competition). However, these seem to be difficult to introduce since they involve a considerable redistribution of political power.

How difficult this can be is exemplified, for instance, by the repeated attempts to decentralize and to reform the federalist system in Germany. Although there is a theoretical consensus to devolve power to the states (*‘Länder’*), there is hardly ever an agreement on the practical mechanism since it would mean redistributing power among existing players. In general, the only way to circumvent the problem of existing stakeholders having to agree to a redistribution of power is to conceive institutional reforms behind a ‘veil of ignorance’ (e.g., by moving the starting point into the future) or to use a supranational mechanism (e.g., the EU which has served as a force of change by establishing a clear system of steps and policies to be adopted before access of new members).

A final point to note is that a system with many veto players is good for growth only when it serves to stabilize an open and competitive economic system, as happens to be the case mostly in Switzerland. By contrast, many developing countries still require reforms that open up markets and lead to a weakening of interest groups that currently benefit from protection. It may well be that having a Swiss-type of political system type would lead to sclerosis if economic openness is lacking since short-term losers have considerable power to resist reforms. For example, in a country like Germany, which needs further flexibility in labour and capital markets, introducing more veto players could make economic reforms harder, not easier. One might, on the other hand, also argue that well-informed citizens—through referenda—can change the game among organized interest groups and help to reform an economy in a direction that politicians alone could not do. Direct democracy thus seems to have been an important element of the success story in the case of Switzerland—but cannot serve as a magic bullet to bring forward any country. It is the combination of economic competition and political contestability that counts.

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Appendix 1

Competence allocation to different jurisdictional levels in Switzerland and Austria

	Switzerland			Austria		
	Federal	Cantonal	Communal	Federal	'Laender'	Communal
Income tax	*	**	*	X	x	X
Revenue and capital tax	*	**	*	X	x	X
Wealth tax	-	**	*	-	-	-
Indirect taxes	*	-	-	X	x	X
Public security	*	**	*	**	*	*
Justice	*	**	-	**	*	-
Police and firefighters	-	**	*	**	*	*
Defence	*	-	-	*	-	-
Education	*	**	*	**	*	*
Primary schools	-	*	**	-	**	*
General education school	*	**	-	*	-	-
Universities	*	**	-	*	-	-
Culture and leisure	-	*	**	*	*	*
Healthcare	-	**	*	*	**	*
Social welfare	*	*	*	*	-	-
Social insurance	**	*	-	*	-	-
Public welfare/social aid	-	*	**	**	*	*
Traffic	*	*	*	**	*	*
Environment/regional planning	*	**	**	*	*	**

Note: * = Competence at the respective level

** = Higher competence with respect to other levels

X = tax sharing

Source: Feld and Schneider (2002: Table 1).