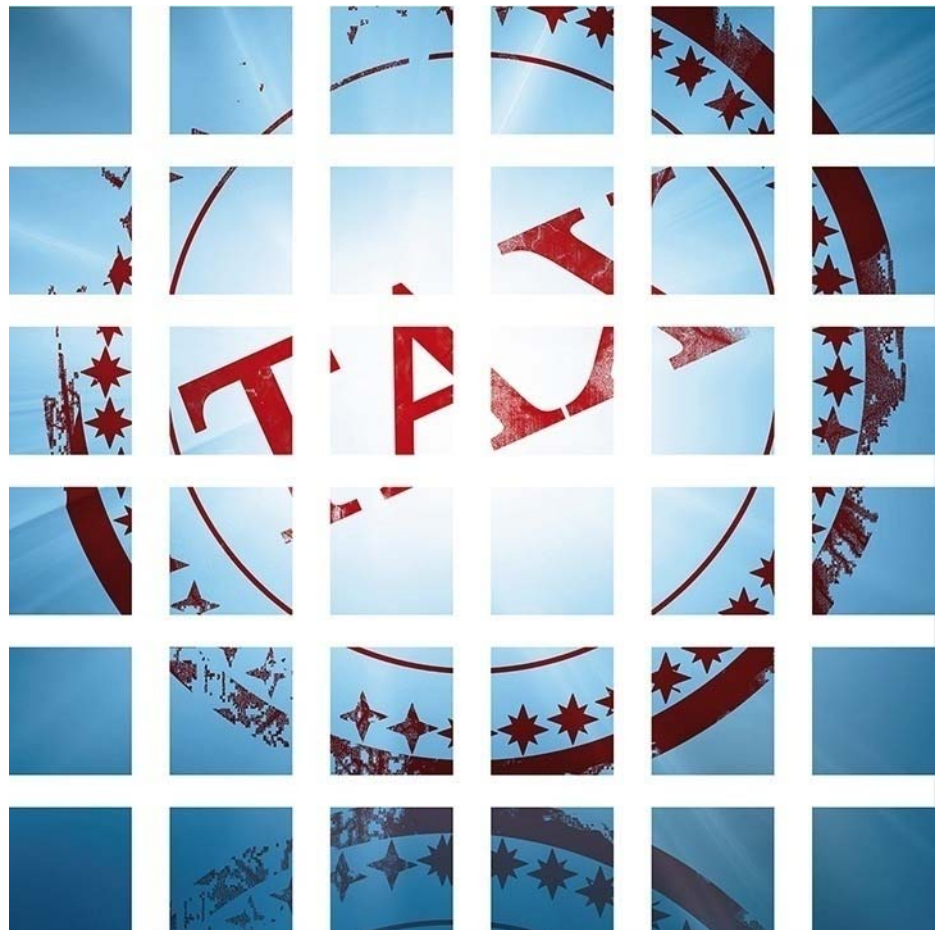


BAK TAXATION INDEX 2011

Effective Tax Burden on Companies
and on Highly Qualified Manpower
and the Sustainability of Public Finances

Executive Summary



Executive Summary for the International Benchmarking Programme (IBP)

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Authors

Analysis of Effective Tax Burdens:

Daniel Dreßler, ZEW

Dr. Christina Elschner, Universität Mannheim und ZEW

Jost Henrich Heckemeyer, ZEW

Elisabeth Köpping, Universität Mannheim

Uwe Scheuering, ZEW

Sustainability of Public Finances:

PD Dr. Friedrich Heinemann, ZEW

Dr. Alexander Kalb, ZEW

Martin Eichler, BAKBASEL

Beat Stamm, BAKBASEL

Sponsors of the research project of IBP Module Taxation

Swiss Federal Tax Administration, Bern

Tax, Finance and Economics Departments of the cantons of Appenzell Ausserrhoden, Basel-Stadt, Bern, Glarus, Nidwalden, Obwalden, Schaffhausen, Schwyz, St. Gallen, Zug and Zürich.

Information & Distribution

Marc Bros de Puechredon, T +41 61 279 97 25

marc.puechredon@bakbasel.com

Postal Address

BAK Basel Economics AG

Güterstrasse 82

CH-4053 Basel

T +41 61 279 97 00

F +41 61 279 97 28

info@bakbasel.com

<http://www.bakbasel.com>

Centre for European Economic Research/

Zentrum für Europäische Wirtschaftsforschung (ZEW)

L7, 1

D-68161 Mannheim

Tel. +49 621 1235 0

Fax +41 621 1235 223

elschner@uni-mannheim.de

heckemeyer@zew.de

<http://www.zew.de>

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Executive Summary

Aim and Scope of this Study

This executive summary presents the BAK Taxation Index 2011, an indicator for the effective tax levels for companies and for highly qualified manpower. Taxation of companies is a widely accepted location factor. Additionally, given competitive labour markets for highly qualified employees, companies have to compensate these highly qualified employees for international differences in labour tax levels. Both elements constitute a tax burden on companies and have an impact on a location's attractiveness for investment decisions.

This year, for the first time, the BAK Taxation Index is complemented by an analysis of the sustainability of public finances. The new module "sustainability of public finances" establishes and calculates indicators of the bearing capabilities of public finances in the assessed locations. These indicators allow a quantitative assessment and an international comparison. Based on the OECD-concept of "Fiscal Sustainability" the analysis provides for the first time internationally comparable results on the sustainability of public finances in Swiss cantons. This is important for companies as well: locations that cannot keep their public finances on a sustainable trajectory are less attractive because of the risk of a higher tax burden in the future.

The research has been conducted on behalf of BAK Basel Economics AG (BAKBASEL) as an element of its International Benchmarking Programme (IBP) and has been carried out in co-operation with the Centre for European Economic Research (ZEW) in Mannheim. The IBP evaluates and compares economic performance and location factors across European regions and selected "benchmark" regions worldwide. The BAK Taxation Index represents the headline figures of the IBP's Taxation Module. It is regularly updated and illustrates trends in the effective tax levels of for companies and for highly qualified manpower.

The BAK Taxation Index 2011 examines the different tax burdens of 84 regions worldwide. It covers locations in Europe, the United States and Asia. Generally, within the considered countries, the capital or the most important city economically, if clearly identifiable, is taken as the place to be evaluated. Whenever there are differences in tax regulations at the sub-national level, we take these into account and consider selected regional capital cities in a given country. In Switzerland, this is always the capital of the respective canton (Kantonshauptort). In addition, the BAK Taxation Index 2011 considers intra-regional variation. Hence, we consider variation of effective tax burdens *within* a region or a country if the effective tax levels indeed differ among the municipalities of the respective region. In particular, we report the minimum and maximum effective tax levels and illustrate the range of values.

Besides the 17 selected Swiss cantons, this study covers locations in 18 EU member states and Norway. Outside Europe, seven states of the US, Singapore and three major Chinese cities (including Hong Kong which has a separate corporate and income tax system) are considered. As outlined above, both inter-regional and intra-regional differences in tax regulations are taken into account. Within this executive summary, we will first focus on the inter-regional or international variations in effective tax burdens. Then we will turn to the intra-regional variations among the Swiss cantons and several other countries. The comprehensive report includes many more regions along with their internal variations. After the presentation of the results for companies, the effective tax burdens on highly qualified manpower will be focused on. Finally, the executive summary will conclude with a discussion of the sustainability of public finances.

The scope of the study is as follows:

- This study is based on effective tax burdens for two reasons. Effective tax burdens may differ significantly from statutory tax rates. They are also more relevant for investment decisions than statutory tax rates. Therefore, the analysis quantifies meaningful estimates of effective tax burdens that are directly comparable between locations. These estimates take into account the most important rules governing the tax rate and the tax base of all relevant taxes. For company taxation, these relevant taxes include the corporate income tax including surcharges, other profit related taxes, real estate taxes, and specific non-profit taxes. For the taxation of highly qualified manpower, the study considers income taxes including surcharges, tax-like social security contributions and wage taxes paid by the company.

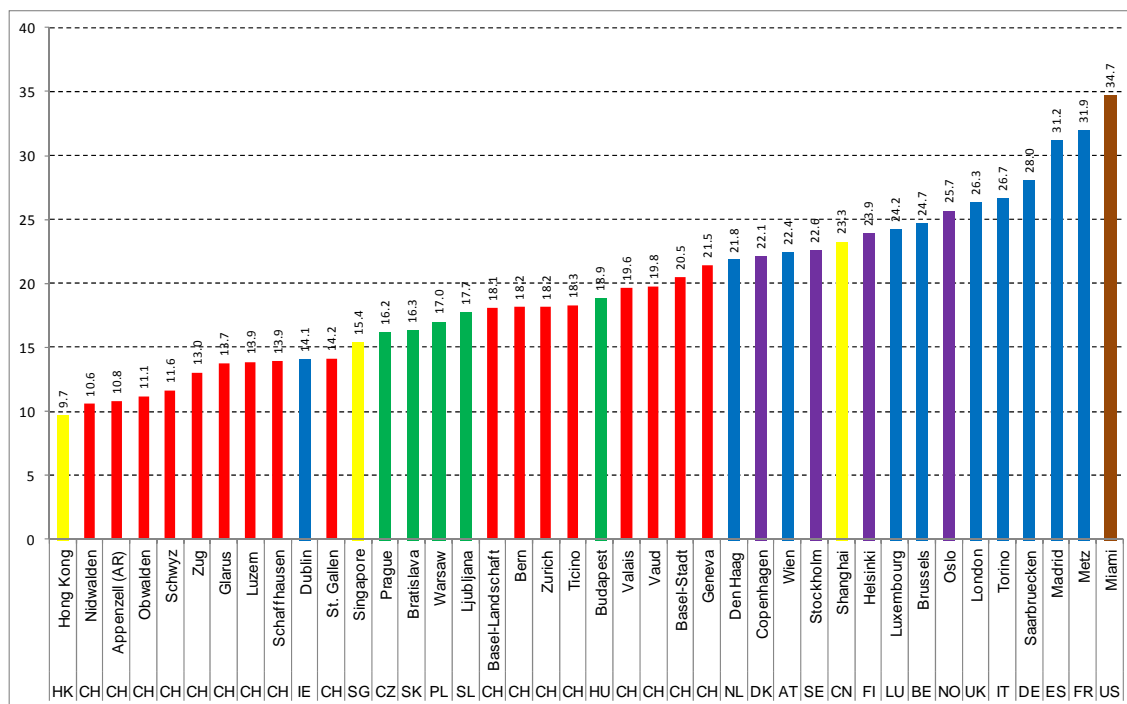
- Second, an effective tax rate is always the result of underlying assumptions. To identify the general context, and to find out the most relevant tax provisions in different economic constellations, the so-called tax drivers, this study examines the effect of important tax provisions on effective tax burdens.
- Third, taxation is deemed to be an important location factor. In order to compare the attractiveness of different locations from a tax perspective, this study compares effective tax burdens internationally, inter-regionally and, in a complementary analysis, intra-regionally. Looking at effective tax rates over time provides insight into common trends and possible interdependencies between locations. The analysis of the sustainability of public finances further adds to understanding the whole picture.

Company Taxation

The BAK Taxation Index 2011 for companies presents estimates of effective average tax rates (EATRs) for companies in 2011. It is the first update allowing an international comparison of EATRs since the BAK Taxation Index of 2009. The applied methodology underlying the calculations is briefly outlined in the grey box at the end of this section.

Figure 1 shows the **BAK Taxation Index 2011 for companies**, which is the ranking of the effective average tax rates (EATR) for companies for the considered national capitals or the country's median regional capital if more than one region is considered. For Switzerland, the results for all 17 cantons considered are shown (cantonal capitals). The EATR is a measure of the effective tax burden for profitable investment projects. Hence it is a measure of the attractiveness of the considered regions for the location of new profitable projects. It is more meaningful than simple statutory tax rates because it takes into account all relevant types of taxes and, in particular, the respective tax base regulations. The respective values range from 9.7% in Hong Kong to 34.7% in Miami, the US median. The highest EATR of all locations considered in this study is 41.1% and is levied in New York City (not shown in Figure 1).

Figure 1: BAK Taxation Index 2011 for companies – EATR (%)



Note: For Switzerland, the tax burden has been calculated for the capital of the canton (Kantonshauptort). Other locations shown are the (economic) capitals of their respective regions. If more than one region is considered in a given country, the median location with respect to the EATR is shown.

Source: ZEW/BAKBASEL.

The following analytical overview of the effective tax burdens summarises the main findings of the study. The **Swiss cantons**, marked with red bars, have relatively low effective average tax rates compared to the other regions considered. The majority of the non-Swiss locations analysed have higher EATRs than the Swiss cantons. In Figure 1, we can see two groups of Swiss cantons. Nine cantons are in the lowest third of the BAK Taxation Index. Ireland is the only European country with a similarly low EATR. The other eight cantons are distributed around Budapest, the capital of Hungary, which represents the median of all locations shown in Figure 1. The values of the effective average tax rates in Switzerland range between 10.6% in Nidwalden and 21.5% in Genève. These comparably low EATRs are the result of Switzerland's low combined statutory tax rates and its narrow tax base.

The **Eastern European countries**, marked with green bars, make up the largest group with effective average tax rates similar to those of the Swiss cantons. Most of them, i.e. the Czech Republic, Poland, the Slovak Republic and Slovenia, are located between the two groupings of Swiss cantons. Only Hungary with 18.9% in Budapest displays an approximately one percentage-point higher value than the other four countries and represents the median EATR in the BAK Taxation Index 2011 shown in Figure 1. Slovenia moved forward in the ranking and now has a lower EATR than Bern, Basel-Landschaft and Zurich. The main reason for this is a reduction of the corporate income tax rate by two percentage-points since 2009.

The four **Scandinavian countries**, marked with purple bars, have higher EATRs than all of the Swiss cantons. Their EATRs range between 22.1% in Denmark and 25.7% in Norway. This mainly stems from their higher statutory corporate income tax rates. Norway places the highest tax burden on its companies applying the highest statutory profit tax rate, 28%, in this group of countries. Compared to 2009, Sweden and Norway have not altered their tax systems. Hence, the EATRs are unchanged. In Denmark, the depreciation allowances for buildings were tightened slightly, which led to a +0.1%-points increase in the EATR. In Finland, the effective average tax rate increased by +1.1%-points. The Finish double depreciation rate for buildings and machinery was only applicable in 2009 and 2010.

Most of the **Continental European countries** (including the United Kingdom and Ireland), marked with blue bars, have relatively high effective average tax burdens for companies compared to the other countries. The only exception is Ireland, where the EATR is only 14.1% and, thus, the 10th lowest value of all considered regions. The reason for this position is that Ireland has the lowest combined statutory profit tax rate of all considered locations. Ireland still does not have the lowest EATR because its tax base is broader than in some Swiss cantons and in Hong Kong. The other Continental European countries face effective average tax burdens that range between 21.8% in Den Haag, the median of the Netherlands and 31.9% in Metz, the capital of the French region Moselle, representing the median of France. The smaller countries, namely Austria, Belgium, Luxembourg and the Netherlands, tax at lower effective rates than the larger countries. They have EATRs between 21.8% and 24.7% whereas France, Germany, Italy, Spain and the United Kingdom have values between 26.3% and 31.9%. The United Kingdom lowered its profit tax rate from 28% to 26% and its basic real estate tax rate from 48.1% to 43.3%, which led to a decrease in the EATR. As a result, it moved ahead of Italy in the BAK Taxation Index 2011.

Six of the seven considered regions of the **United States** (brown bar) still have higher EATRs than all other locations, although the combined statutory profit tax in the United States is lower now than it was in 2009. Miami represents the median location of the analysed US states with an EATR amounting to 34.7%. The EATRs of the considered US states are between 30.3% in Seattle and 41.1% in New York City.

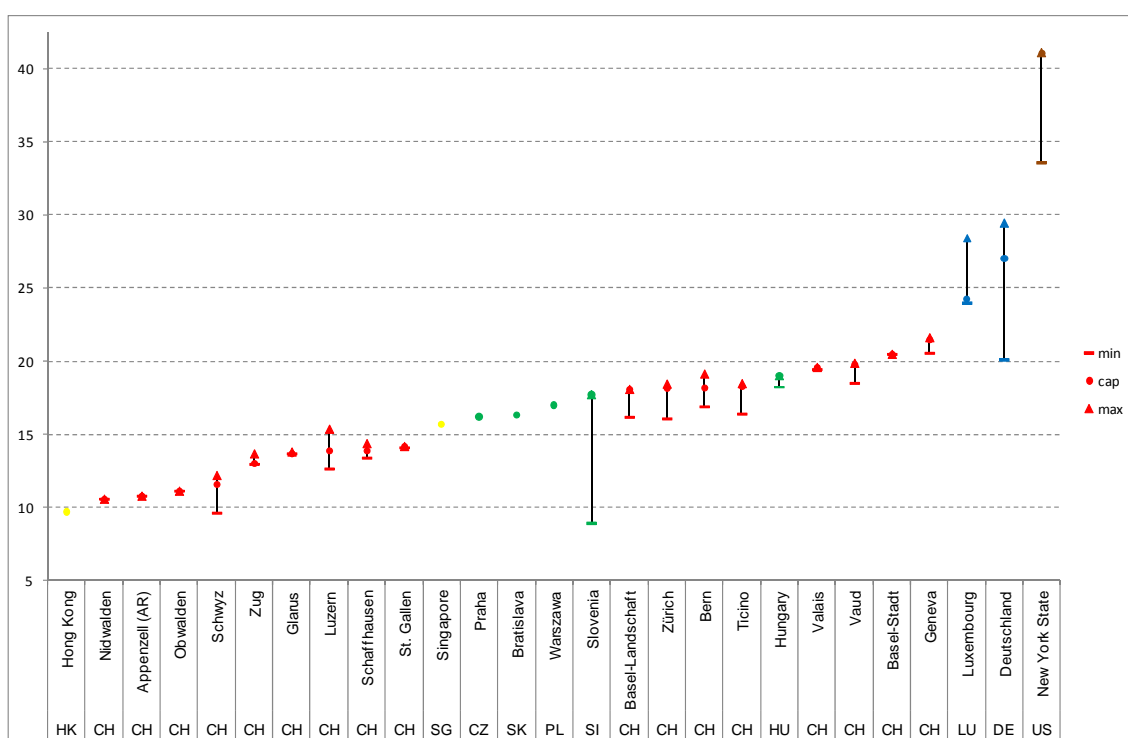
Asian locations are marked with yellow bars. The BAK Taxation Index 2011 covers Singapore and three cities in China, including Hong Kong. Hong Kong has kept its own tax system. It has the lowest EATR of all considered locations, amounting to 9.7% just like it was in 2009. The main reason for this extremely low rate is not its corporate income tax rate, which is 16.5%, but its generous depreciation rules especially for intangibles and machinery. Singapore ranks 12th in the BAK Taxation Index 2011. Its EATR amounts to 15.4%, which ranks it in between the Swiss cantons. The two considered locations in China, Shanghai and Beijing, share the same EATR due to missing to the lack of regional differences. The effective average tax rate is 23.3%, which is higher than the values of all Swiss cantons but is still lower than the EATRs of most Continental European countries.

For some countries, we have examined more than one region. Besides the Swiss cantons, we have also observed different EATR values for the 16 German states and various regions within France, Italy, the

Netherlands and the United States. In the five considered French regions, the effective average tax rate varies between 31.1% for Paris and 32.3% in Besancon. The underlying reason is variation in local real estate tax rates. Differences in real estate taxes are also the main reason for the small differences in effective tax rates among the six Italian cities and the four Dutch cities considered in this study. In the United States, the local variation of the EATR is more pronounced. The effective average tax rates in the seven states considered vary between 30.3% in Seattle and 41.1% in New York City mainly due to different profit and property tax regimes at the state level.

So far, we have used to the effective average tax rate of the (economic) capital as a representative of the respectively considered regions. As the profit tax varies locally in many countries, for example in Switzerland and Germany, the effective tax burden also differs at a sub-regional level. Therefore, we will now take a look at intra-regional differences and show the range of EATRs in a given region where the profit taxation varies among municipalities. For the derivation of the maximum and minimum rates, we have considered municipalities with at least 2,000 inhabitants. Figure 2 shows the results of the intra-regional analysis.

Figure 2: Range of EATRs at the corporate level within Swiss cantons and selected regions, in %, 2011



Note: The dot represents the effective tax level for the (cantonal) capital. The dash (triangle) marks the minimum (maximum) EATR. Municipalities are included if they have at least 2,000 inhabitants.

Source: ZEW/BAKBASEL.

In Switzerland, there are ten cantons with intra-regional differences. In five of them, the capital has the highest effective average tax burden or it taxes companies at an effective level near the maximum rate. In the cantons of Bern, Luzern, and Schaffhausen, the capitals have rates which lie between the minimum and maximum rates. As a result, a ranking of the minimal tax burdens in the regions considered would be different from the BAK Taxation Index, which displays the values for the capitals. Wollerau, for example, has both the minimum rate of the canton of Schwyz as well as the lowest EATR of all considered Swiss locations, although the city of Schwyz is only ranked 4th in the BAK Taxation Index. Wollerau has a lower EATR than even Hong Kong. Yet, it is not the lowest taxing location of all cities considered because Koper, which has the minimum of Slovenia, even undercuts Wollerau's EATR by 0.7%-points. Compared to other countries, the minimum rates of the four cantons of Basel-Landschaft, Bern, Ticino and Zurich undercut the EATRs of the Eastern European countries Poland and Slovenia, which have no local variation. This is remarkable because the Eastern European countries have lower effective tax burdens in the BAK Taxation Index.

In Slovenia, the large range of the EATR results exclusively from a reduced profit tax rate in the city of Koper, which is the last “Special Economic Zone” in the country. In Hungary, we considered two locations, the capital Budapest and Mátraverebély, the latter which levies the lowest local business tax and a -1.8%-points lower EATR than Budapest. In Germany, all 16 federal states show intra-regional profit tax variation because of the local business tax. While the EATRs of the capitals are rather similar with a mean of 28%, the EATRs of the minimum rates differ significantly with a mean of 23%. The highest value in Germany can be found in Bottrop in Nordrhein-Westfalen amounting to 29.4%. The lowest EATR in 2011 in Germany, 20.1%, is in Walldorf in Baden-Württemberg. With regard to intra-regional variation in the seven US states considered, New York is the only state where the EATR varies significantly between municipalities. This is because New York City levies its own local profit tax in contrast to all other municipalities in the state of New York. Remarkably, even the minimum EATR value of the state of New York is higher than the effective average tax rates in all other countries considered.

As the EATR is the most relevant tax burden for location decisions, the BAK Taxation Index 2011 is a ranking based on such effective *average* tax rates. A different measure, which is more important for achieving the optimal level of investment, is the effective *marginal* tax rate (EMTR). When the EMTR is lower, the optimal level of investment is higher. EMTRs react less to differences in the profit tax rate, but are driven more by tax base regulations, in particular depreciation allowances, and non-profit taxes. The EMTRs vary between -4.7% in Brussels and 39.6% in New York City. France, the maximum in 2009, has moved slightly down the ranking in 2011. In general, the EMTR ranking is similar to the EATR ranking. Belgium, however, shows the lowest EMTR although it is a high taxing location in terms of the effective average tax rate. The reason for its negative EMTR is its notional interest deduction for corporate equity. Hong Kong remains at the top of the EMTR ranking, just as it does in the EATR ranking, due to its generous depreciation rules. The Swiss cantons also have comparably low effective marginal tax rates ranging between 4.8% in Nidwalden and 14.9% in Basel-Stadt. Similar EMTRs are only found in the Eastern European countries, Singapore and three other Western European countries: Ireland, Luxembourg and the Netherlands. The other continental European countries have higher effective marginal tax burdens. The United Kingdom levies an EMTR of 27.0%, which is the highest value in this group. Concerning the Scandinavian countries, we find EMTRs ranging between 15.1% in Sweden and 20.7% in Norway, which are higher than the values found in the Swiss cantons. The United States has the highest EMTR among all the considered locations.

The Effective Tax Burden of Companies: Methodology

The common approach introduced by Devereux and Griffith forms the methodological basis for the determination of companies' effective tax burdens. We measure the effective average tax rate (EATR) on a profitable investment that yields a standardized pre-tax rate of return on investment of 20%. Furthermore, we measure the effective marginal tax rate (EMTR), i.e. the relative tax-induced wedge between the minimum pre-tax real rate of return and the post-tax real rate of return required by the shareholder. We assume a corporation in the manufacturing sector which undertakes a particular mix of investments and uses a particular combination of sources of finance. The types of investment assets considered are industrial buildings, intangibles (patents) bought from third parties, machinery, financial assets and inventories. The types of assets are weighted equally, i.e. each type of asset is assigned a weight of 20%. The financing policies of the corporation take into account three different sources of finance which are, sequenced by weight: retained earnings (55%), debt (35%) and new equity capital (10%).

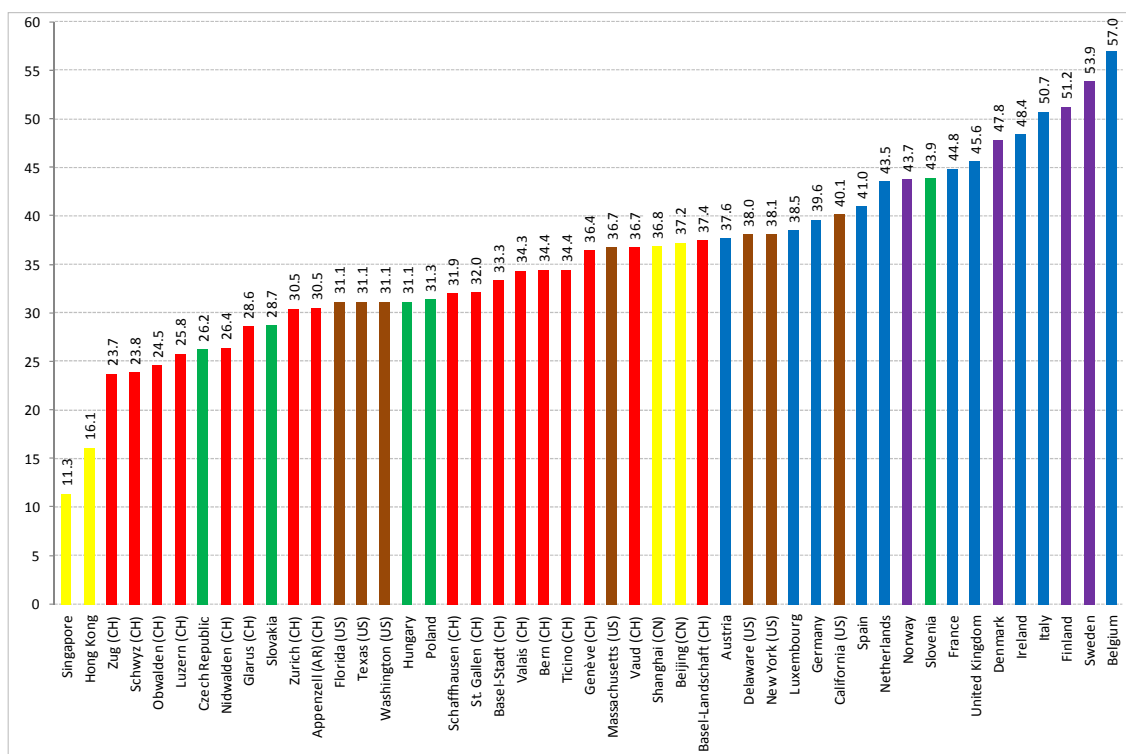
The calculations take into account the most relevant tax provisions of the national tax systems. With respect to the taxation of corporate profits, the approach considers statutory corporate profit tax rates as well as surcharges and some other special rates for particular types of income and expenditures. It also takes into account the most important features of taxes on capital, e.g. real estate taxes. Generally, it assumes the corporation earns profits and capital at a level where the top-bracket statutory tax rates are applied. Regarding the definition of the taxable base, the relevant rules concerning depreciation and amortisation allowances, valuation of inventories and interest deductibility in case of debt financing are considered. Additionally, the approach includes some important and generally available investment incentives.

Taxation of Highly Qualified Manpower

The BAK Taxation Index 2011 on highly qualified manpower represents the effective tax level for employing a single highly qualified person who earns EUR 100,000 after taxes and charges. The applied methodology behind the calculations is briefly outlined in the grey box at the end of this chapter.

Figure 3 represents the **BAK Taxation Index 2011 on highly qualified manpower** in 47 locations. The total spread of effective tax rates between the location with the lowest employment costs and the location with the highest amounts to 45.7%-points. The calculated tax levels range from 11.3% in Singapore to 57.0% in Belgium. These two countries occupy the same positions in the ranking as in 2009 and 2007. An employer who wants to compensate a highly qualified employee with a disposable income of EUR 100,000 after taxes and charges faces employment costs of EUR 112,795 in Singapore. In Belgium, the employment costs reach EUR 232,656, more than twice the amount in Singapore. In 2011, the average effective tax rate on highly qualified labour is 35.7%, the same level as in 2009. This is equivalent to employment costs of EUR 155,484. Genève (CH) represents the median region with a rate of 36.4%.

Figure 3: BAK Taxation Index 2011 on highly qualified manpower, disposable income EUR 100,000, in %



Note: In Switzerland, the tax burden has been calculated for the capital of the canton (Kantonshauptort); in Belgium, Denmark, Finland, Italy, Norway and Sweden, it has been calculated for the capital of the country. The colour of the bars is assigned according to the region: Swiss cantons (red), Eastern Europe (green), Scandinavia (purple), Continental Europe/Ireland/United Kingdom (blue), United States (brown) and Asia (yellow).

Source: ZEW/BAKBASEL.

The Swiss cantons (red bars) follow Singapore and Hong Kong in the ranking. Yet, the effective tax level in the top-ranked Swiss canton of Zug more than doubles Singapore's rate. The effective tax rates in Switzerland range from 23.7% (Zug) to 37.4% (Basel-Landschaft) and dominate the top half of the ranking. Focusing on Switzerland only, the lowest effective tax rate is now -0.3%-points lower than in 2009 while the highest rate increased by +0.1%-points. The cantonal and municipal income tax tables mainly determine the ranking within Switzerland. Almost all cantons apply progressive income tax tables. For most cantons, the canton's top rate is a good indicator for its relative position in the BAK Taxation Index compared to other Swiss regions. However, the top rate is not always decisive for the rank within Switzerland. In the case of Zurich, its top rate of 40% is higher than in ten of the 17 Swiss cantons represented.

Yet, Zurich is in 7th position in the intra-Swiss ranking of the BAK Taxation Index. Compared to the results in the last international report in 2009, most cantons have more or less kept their positions in the international ranking, i.e. they have moved at most three positions up or down. Any increase in the effective tax burden in Switzerland has been due to unfavourable changes in the exchange rate, which has led to a higher disposable income in Swiss francs (see the grey box below). The disposable income of EUR 100,000 after taxes and charges has increased from CHF 146,000 to CHF 148,500 with the new exchange rate. The highly qualified employee is thus subject to a higher tax bracket, resulting, all other things held constant, in slightly increased effective tax rates.

As in 2009, the **Asian locations** Singapore and Hong Kong (marked yellow) occupy the first two positions of the ranking with 11.3% and 16.1%. This puts them considerably ahead of all other countries which start off with effective tax rates above 23%. A single employee without children and a disposable income of EUR 100,000 costs EUR 112,795 in Singapore and EUR 119,175 in Hong Kong. These two countries operate fully-funded social security systems with almost no redistribution and, thus, have very low charges on high income levels. Their effective tax rates are not driven by contributions to their social security systems. Singapore as well as Hong Kong apply progressive tax schemes. However, the city-state Singapore is characterised by a rather long progression with a fairly low top tax rate of 20% on income above SGD 320,000 (EUR 163,315). Hong Kong has a shorter progression and already applies the top tax rate of 17% to any income above HKD 120,000 (EUR 11,029). Therefore, Singapore's effective tax rate is still very much affected by the progression while Hong Kong's effective tax rate in the BAK Taxation Index is closer to the top income tax rate. The Chinese cities of Shanghai and Beijing have moderate effective tax rates of 36.8% and 37.2%.

Looking at **Eastern Europe** (marked green), the Czech Republic's 26.2% tax rate puts it just behind the Swiss low-tax cantons of Zug, Schwyz, Obwalden and Luzern. Since 2008, the Czech Republic has been taxing individuals at a flat rate of 15%. Income ceilings, which have been raised in the last two years, limit the amount paid into the social security system. In 2011, the country moved from 3rd to 7th in the ranking (now just behind four Swiss cantons). Slovakia, Hungary and Poland can be found ranked in between the Swiss cantons as well. Slovakia applies a flat tax of 19%. Hungary followed the trend in Eastern Europe with the introduction of a 16% flat tax on personal income in 2011. This improved its position in the ranking significantly. With a rate of 43.9%, Slovenia is one of the countries with high taxes with 43.9%.

Three of the **US states** (brown bars) shown have an effective tax rate of 31.1% and compete with the Swiss cantons with moderate tax rates. Florida, Texas and Washington do not levy state income taxes. Thus, they are the locations in the US with the lowest tax burdens. The other four US states shown challenge the Continental European countries in the lower half of the ranking. California's tax rate of 40.1% is the highest while Massachusetts's rate of 36.7% competes with the higher taxing Swiss cantons and mainland China.

Continental Europe, Ireland and the United Kingdom (blue bars) dominate the lower half of the ranking with rates ranging from 37.6% (Austria) to 57.0% (Belgium). The top income tax rates in these countries are high, up to 54.5%. The absence (or partial absence) of income ceilings on social security contributions is another factor for high effective tax rates in many of these countries. Compared to 2009, the United Kingdom has dropped 14 positions in the ranking. The United Kingdom introduced a new top income tax bracket with a rate of 50% (the top rate used to be 40%) and considerably aggravated the old-age provision taxes for high-income tax payers. The tax burden in Luxembourg increased as well due to rising unemployment taxes moving Luxembourg to 33rd in the ranking (2009: 23rd).

The **Scandinavian countries** of Norway, Denmark, Finland, and Sweden (purple) are found in the lower half of the ranking. Their effective tax rates are 43.7% or higher. Sweden has the highest costs of employment among these four countries. In 2009, Finland was ranked last in this group, but it has since moved ahead of Sweden mainly because employees in Sweden now have higher disposable incomes in the local currency due to exchange rate changes.

Employees with **family** receive special allowances via the tax and social security system in almost all countries and regions. Therefore, for example, in almost all countries, the tax burden on families is lower than on singles. This study computes the effective tax level for 'families' as the tax imposed on a highly qualified employee who earns a disposable income of EUR 100,000 and who is married and has two chil-

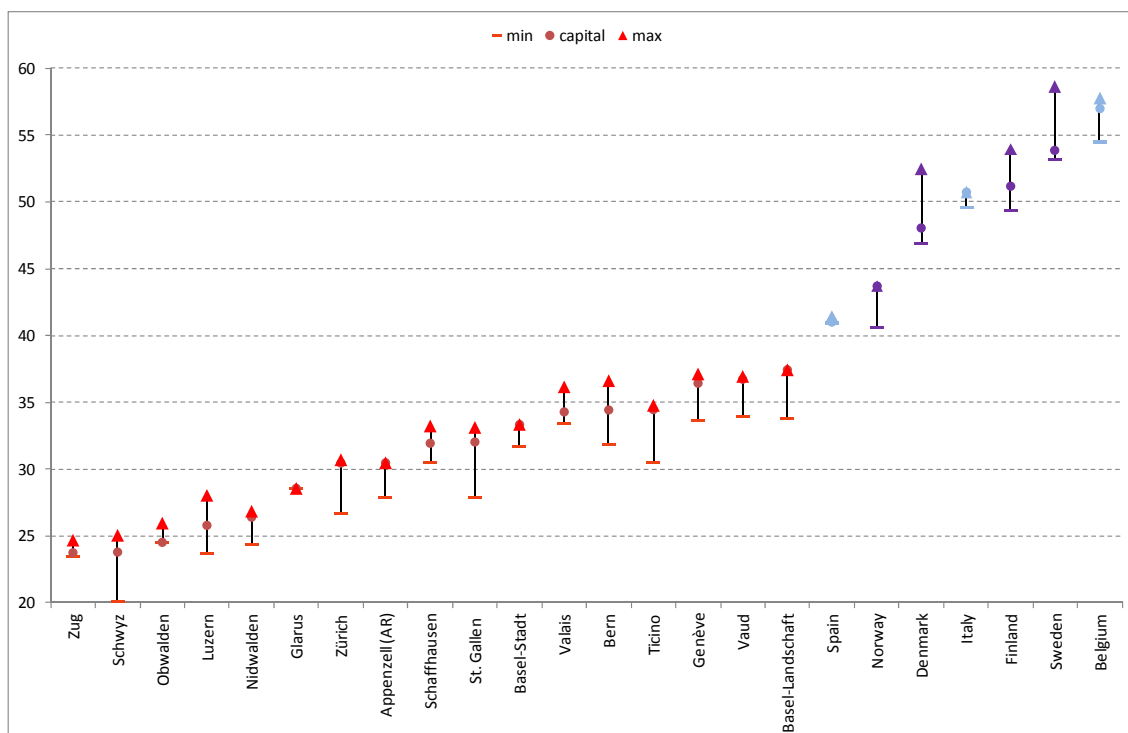
dren. Effective tax rates for families range between 10.6% in Singapore and 52.3% in Sweden. Luxembourg, Germany, the USA and many Swiss cantons are characterised by high allowances for families. Within Switzerland, Zug grants (as in 2009) the highest relative tax allowance for families with a 29.2% lower effective tax rate. Countries with family advantages amounting to less than 5% are, in decreasing order of tax advantages: Hungary, Slovenia, Finland, Sweden, the Czech Republic, Slovakia, the United Kingdom, China (Shanghai and Beijing) and Italy. No location taxes families more than singles.

Income taxes typically show redistributive characteristics via a progressive tax scale and/or personal allowances. Therefore, this study presents the effective tax rates for different **levels of disposable income**: EUR 50,000, EUR 100,000 and EUR 200,000. Most countries - but not all - show a progression in effective tax rates with increasing income levels. Within Switzerland, the highest spread between the analysed income levels can be found in Valais (16.3%-points) and in Vaud (16.0%-points). Hong Kong, Hungary, Italy, Poland and Slovenia show little or no progressive effects in their effective tax burdens.

In several countries, regions and municipalities have the right to set their own tax rates. But the degree of influence a municipality has on the overall tax burden varies considerably among countries. This report gives deeper insights into the **intra-regional differences** within Switzerland, Scandinavia, Belgium, Italy and Spain.

In Switzerland, effective tax burdens do not only vary among cantons, but also across among municipalities. Hence, this study provides additional information on a canton's lowest and highest taxing municipalities. Figure 4 shows the range of effective tax levels for an single employee earning EUR 100,000 after taxes and charges for various Swiss cantons and for countries with regional variations in tax burdens.

Figure 4: Range of effective tax levels, single employee, disposable income of EUR 100,000, in %, 2011



Note: The dot represents the effective tax level in the cantonal/regional capital. The dash marks the effective tax level in each canton's/region's municipality with the minimum municipal multiplier/tax rate. The triangle marks the maximum rate. Municipalities are included if they have at least 2,000 inhabitants.

Source: ZEW/BAKBASEL.

Figure 4 shows that the intra-cantonal spread between the highest and the lowest effective tax level varies substantially across cantons. Some cantons have a spread of 4.8%-points or more, such as Bern (4.8), Schwyz (4.9) or St. Gallen (5.2), while Glarus, for example, has no intra-cantonal variation at all. Often, the canton's capital has the maximum tax burden (Appenzell AR, Basel-Landschaft, Basel-Stadt, Glarus) or

one that is close to the maximum (Vaud, Zurich, Ticino). However, in some cantons, the opposite is true, with the tax burden in their capitals at or close to the minimum (Zug, Obwalden).

The Scandinavian countries of Denmark, Finland, Norway and Sweden are characterised by a high regional dispersion of tax rates. At 5.5%-points, the difference between the region with the highest and that with the lowest tax burden is most pronounced in Sweden and Denmark. It is lowest in Norway with 3.2%-points. Compared to other municipalities within each country, employment in the capitals of Denmark, Sweden and Finland bears relatively low costs. In Norway, a reduced state tax rate is only applicable in selected regions. Therefore, the capital asks the maximum rate.

In Belgium and Italy, only a surcharge on personal income tax is set by municipalities and provinces. The variation in Belgium is about as large as in Norway, but is fairly small in Italy. In Belgium, the resulting effective tax rates vary between 54.5% and 57.7%. With a rate of 57.0%, the capital city of Brussels is at the higher end of the local variation.

In Spain, autonomous regions have the right to modify the general income tax rates. Spain shows very low dispersion. This is due to the fact that Catalonia, which is the region with the highest rate increase, taxes the higher income brackets at a very high level, but taxes the lower income brackets at rates comparable to Madrid's.

The Effective Tax Burden on Highly Qualified Manpower: Methodology

The tax burden on highly qualified manpower is measured by means of a simulation model developed at the ZEW. The model allows for consideration of several components of the remuneration package, family status, and varying levels of compensation. The concept parallels established methodologies for the quantification of company tax burdens by calculating the effective average tax rate (EATR) as an indicator of the tax burden. The basic idea of our approach is that employers compete for highly qualified employees and, therefore, they have to compensate these valued employees for taxes on labour income and for tax-like social security contributions which employees must pay. As a consequence, the tax burden of different regions is compared for a given *disposable income* after taxes which highly qualified employees can earn at all locations.

The model determines the tax burden in two steps. At first, the tax on a typical qualified employee's income before taxes (the *employment costs*) is assessed. If the resulting income after taxes falls short of (or alternately, exceeds) the required disposable income, the assessment is then repeated for higher (or alternately, lower) employment costs. The model then iterates until the employment costs necessary to obtain the predetermined disposable income are found.

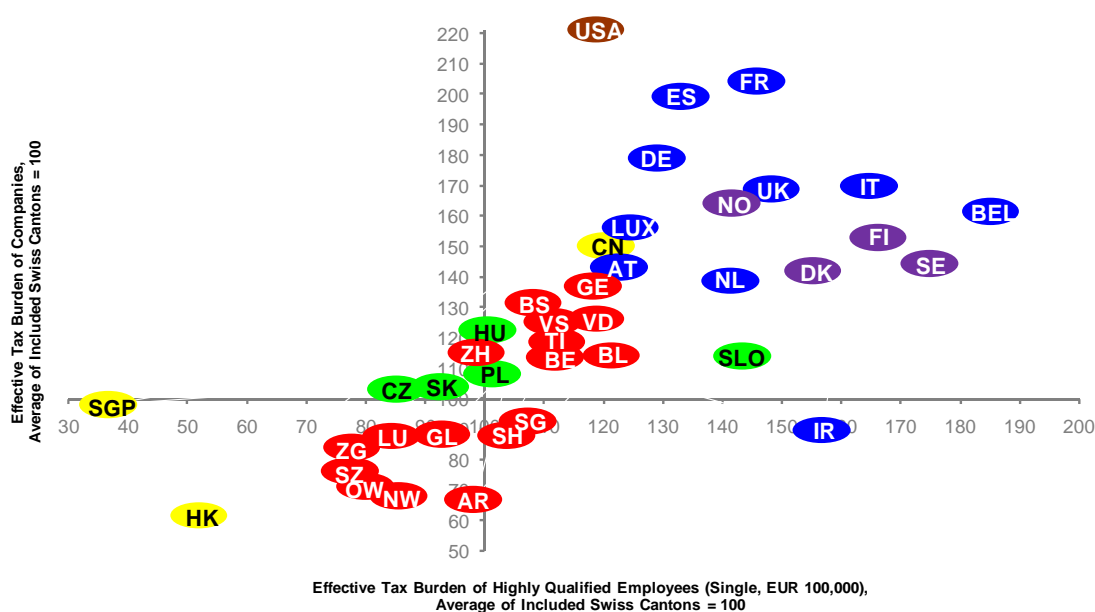
The effective average tax rate (EATR) is calculated by dividing the difference between employment costs and disposable income (the tax wedge) by the employment costs. The EATR thus expresses how much the employer has to expend in addition to the predetermined disposable income. For example, if an employee with a disposable income of EUR 100,000 faces an EATR of 25%, this means that the tax wedge (EUR 33,333) amounts to a quarter of the employment costs (EUR 133,333). In this context, taxes refer to all income taxes including surcharges and state and municipality taxes, as well as payroll taxes paid by the company. Social security contributions are part of the tax burden inasmuch as the employee does not earn a specific, individual benefit by paying them. According to the basic idea of competition, there is little risk of unemployment for the kind of qualified employees considered in this study. Accordingly, contributions to unemployment insurance and, with a similar reasoning, contributions to accident insurance, are defined as taxes. In contrast, health insurance contributions are considered not to be taxes since they are deemed to provide a genuine insurance.

From 2011 on, the conversion of the disposable income from Euro to the respective local currency is based on a rolling average of the exchange rates in the preceding four years. Therefore, changes in the effective tax burden are not only attributable to changes in tax and social security systems; in non-Euro countries they are also attributable to changes in the exchange rate. Before, constant exchange rates used to be assumed. The conversion rate for Switzerland, e.g., was 1.466 CHF/EUR until 2009; in 2011 it is 1.485 CHF/EUR. While until 2009 the effective tax burden was based on a disposable income of CHF 146,600, in 2011 the disposable income is CHF 148,500. Given a system of progressive tax rates, the effective tax burden will then increase due to the increased local currency reference income.

Synthesis of Effective Average Tax Burdens

The effective average tax rates on companies and on highly qualified manpower (single employee, earning EUR 100,000 disposable income) constitute the BAK Taxation Index. The methodologies used to determine the effective tax levels, however, differ. The figures of the BAK Taxation Index for companies and on highly qualified manpower cannot be compared numerically. However, it is possible to compare the ranking and the relative position in the distribution of both indicators. Figure 5 presents such a synthesis. The effective tax levels are indexed, with the average of all Swiss cantons represented set to 100. The vertical/horizontal distance between an observation and the axes shows how much lower/higher this location's effective tax level is compared to the average of the Swiss cantons for companies (vertical axis) and for highly qualified manpower (horizontal axis).

Figure 5: Correlation of the two indicators representing the BAK Taxation Index for companies and for highly qualified manpower (2011)



- Notes:
- In Switzerland, the tax burden has been calculated for the capital of the Canton (Kantonshauptort).
 - Red: AR: Appenzell Ausserrhoden, BE: Bern, BL: Basel-Landschaft, BS: Basel-Stadt, GE: Genève, GL: Glarus, LU: Luzern, NW: Nidwalden, OW: Obwalden, SG: St. Gallen, SH: Schaffhausen, SZ: Schwyz, TI: Ticino, VD: Vaud, VS: Valais, ZG: Zug, ZH: Zurich.
 - Blue: AT: Austria, BEL: Belgium, DE: Germany, ES: Spain, FR: France, IR: Ireland, IT: Italy, LUX: Luxembourg, NL: Netherlands, UK: United Kingdom.
 - Brown: USA: United States of America.
 - Green: CZ: Czech Republic, HU: Hungary, PL: Poland, SK: Slovakia, SLO: Slovenia.
 - Purple: DK: Denmark, FI: Finland, NO: Norway, SE: Sweden.
 - Yellow: CN: China, HK: Hong Kong, SGP: Singapore.

Source: ZEW/BAKBASEL.

Compared to the BAK Taxation Index 2009, the overall picture is in a large part similar. Still, some locations moved horizontally and/or vertically. Altogether, the following conclusions can be drawn with regard to the regions under consideration:

- **Swiss cantons** (marked in red) hold top positions for both indicators. However, there are two non-Swiss locations (Hong Kong and Singapore) with lower effective average tax burdens both on companies and on highly qualified manpower. Furthermore, looking at the dispersion of the Swiss cantons in Figure 5, they almost line up along the 45° line (not shown) of the diagram. This situation is even clearer today than in 2009. It shows that, with the possible exception of Appenzell Ausserrhoden, most cantons which set relatively low tax rates on businesses have also decided to lure highly qualified labour with attractive personal income tax rates. However, those cantons featuring relatively high effective

tive tax levels in one domain also tend to do so in the other domain. Another observation is that the Swiss cantons do not only align along the 45° line, they also seem to gravitate toward the ends of the intra-Swiss spectrum of effective tax levels. This is due to the low tax cantons. Those cantons which already featured low tax rates in 2009, have since generally decreased their effective tax rates even further. This holds true for the cantons of Glarus, Luzern, Nidwalden, Schwyz and Zug. Those cantons which had higher effective levels of taxation in 2009 have since shown less movement in either direction; they have neither increased nor decreased their effective tax rates.

- **Eastern European** locations (marked in green) used to stretch along the x-axis in 2009. With the exception of Slovenia which did not change in position, the remaining four countries (i.e. the Czech Republic, Hungary, Slovakia and Poland) are located close to the origin (zero-point) of the diagram. None of these four countries beats the average of the considered Swiss cantons with respect to EATR on highly qualified manpower. Yet, Poland and Hungary levy an effective tax rate on companies below the Swiss average.
- The **Scandinavian** countries (marked in purple) have not changed much in position since 2009. However, from a tax perspective, Denmark is now clearly more attractive than Sweden and Finland. This picture was less pronounced in 2009. Norway still stands out from the other Scandinavian countries. On the one hand, it imposes a lower effective tax rate on highly qualified labour and, on the other hand, a higher effective tax burden on companies.
- Among the **Continental European** countries (plus Ireland and the United Kingdom), Italy and, in particular, Belgium clearly stand out due to their relatively high effective tax rates on highly qualified manpower. Ireland remains in the position it already held in 2009 and has fairly low effective tax rates on companies, but comparatively higher tax burdens on highly qualified labour. The only countries in Continental Europe which can compete, in terms of tax levels, with the higher taxing Swiss cantons (e.g. Genève) are Luxembourg and Austria.
- The **United States** (marked in brown) have not substantially modified their tax laws. They still tax companies at high effective rates and highly qualified manpower at a rather moderate level.
- Turning finally to the **Asian** locations (marked in yellow), Hong Kong and Singapore are in unique positions. They are the only non-Swiss regions considered in this report which have below Swiss average values both for the effective average tax burden of companies and on highly qualified manpower. Whereas Hong Kong is in a league of its own for both indicators, Singapore taxes companies at a higher rate than nine Swiss cantons, but it has by far the lowest effective tax levels on highly qualified manpower. Finally, China generally taxes corporations and highly qualified manpower at a moderate level.

Outlook on Tax Burdens

The analysis above shows the *current* effective tax burdens on companies and on highly qualified manpower as of 2011. The *future* development of these respective tax burdens is uncertain. Yet, a cautious outlook is possible. In all the cantons and countries not mentioned explicitly in this outlook, no information on proposed changes is available. Therefore, from today's point of view, the effective tax rates are expected to stay at the same level as 2011.

In the cantons of **Switzerland**, several reforms reducing the tax burden on companies and employees for 2012 and beyond are being discussed or have even already been agreed upon. **Basel-Stadt** is going to implement two major measures if the budgetary conditions are satisfactory. The canton plans to cut the profit tax rate by 0.5%-points in each the following two years, reducing the tax rate to 20.0% in 2013. The reduction by half a percentage-point annually is planned to be continued up to 2017 in order to eventually lower the profit tax rate to 18.0%. Furthermore, Basel-Stadt is going to reduce personal income taxes on income exceeding CHF 200,000 in three consecutive steps from 23.5% to 22.25%. **Bern** has decided to reduce its personal income tax rate which will take effect in 2012. Additionally, its child deduction amount will be increased from CHF 6,500 to CHF 7,000. **Luzern** is likely to increase its cantonal multiplier from 150% to 160%. It seems unclear whether or not the repeatedly announced reduction of its profit tax from 3.0% to 1.5% will be carried out.

Obwalden is planning some modifications concerning deductions from the tax base of its personal income tax. The canton is considering replacing its current child deduction of CHF 4,000 with an increased general child deduction of CHF 6,400. The specific deductions for children in secondary education would, however, be abolished. Additionally, the canton is going to cut the profit tax rate on real estate from the current 2.0% to 1.8%. **Schaffhausen** has decided to refrain from tax reductions in 2012. Nevertheless, its aim is to further reduce the effective tax levels in the middle to long run. With this in mind, it is discussing a cut in the profit tax rate from 5% to 4% and in the rate of a special holding tax from 0.0025% to 0.001%. Concerning personal taxes, Schaffhausen is focussing on two measures. First, the net wealth tax could be reduced from the current 0.23% to 0.18%. Second, the tax-free base income could be increased to CHF 7,200 for singles and to CHF 13,800 for married couples.

St. Gallen is going to increase its universal cantonal multiplier from 95% to 105%. Based on this measure, the effective tax rates on both the company and the employee level are going to increase in 2012. **Zug** is going to further reduce its profit tax rate in three consecutive steps of 0.25% each. As outlined in the analysis above, Zug reduced its profit tax rate from 6.75% to 6.5% in 2011. The tax rate is to be further reduced to 6.25% in 2012, to 6.00% in 2013 and to 5.75% in 2014. While the tax rate cuts will reduce the effective tax burden, as of 2012, Zug will have to terminate its cantonal net wealth tax reduction for shares of qualified shareholders.

For the **Continental European countries**, only smaller changes can be anticipated in sufficient detail for the purpose of this outlook. In **Austria**, there are only vague rumblings of the introduction of a possible net wealth tax. **France** plans to lower its wealth tax; the threshold at which the tax becomes payable is about to be increased from a net value of EUR 800,000 to EUR 1.3 million. France is also proposing a lower net wealth tax rate and fewer tax brackets. In **Germany**, the tax-free amount of the individual income tax is to be increased and the tax rates are to be adjusted in order to compensate for the fiscal drag. The realisation of earlier proposals to abolish the solidarity surcharge or to restructure a part of the corporate income tax remains speculative.

Ireland is considering two smaller changes on the level of individual taxation: the income tax relief on pension contributions will be reduced from 41% to 34% in 2012, to 27% in 2013 and to 20% in 2014. Secondly, the tax-free amount will be reduced from EUR 15,500 to EUR 12,900. In the **Netherlands**, there is discussion to lower the corporate tax rate by one percentage-point to 24%. Furthermore, there are going to be amendments to the tax incentives given for research and development (R&D) in the Netherlands. In **Spain**, there is discussion of a temporary re-introduction of a net wealth tax for the years 2011 and 2012. If implemented, net wealth exceeding EUR 700,000 will be taxed at progressive rates reaching from 0.2% up to 2.5%. The **United Kingdom** has plans to continue its recent reduction of the corporate income tax, which went from 28% to 26% in 2011, by further reducing it until it reaches 23% in 2014. Concerning the taxation of highly qualified employees, there is a controversial discussion on the introduction of a 50% rate on earned income exceeding GBP 150,000.

The **Eastern European countries** either have no plans to significantly change their tax regimes or they are increasing tax burdens on individuals. In the **Czech Republic**, several measures dealing with employee taxation will be implemented taking effect in 2013. First of all, the personal income tax rate is going to increase from the current 15% to 19%. Furthermore, using the gross salary to determine the income tax base and individual insurance bases will be abolished. As of 2013, individuals earning monthly incomes exceeding four times the average wage are not going to be allowed to apply the basic tax relief. Also in **Hungary**, changes which are about to be implemented are going to increase the effective tax burden on individuals. In 2011, Hungary introduced a flat personal income tax of 16%. In 2012, this system will already be altered as all those individuals earning more than HUF 202,000 (about EUR 700) will have to pay a surcharge in an amount which has not yet been agreed upon. Concerning company taxation, Hungary announced in 2011 that it was going to reduce the corporate tax rate from 19% to 10% for all companies beginning in January 2013. However, the implementation of this greatly reduced corporate income tax seems rather unlikely now.

Among the **Scandinavian** countries, there are concrete plans for a tax reform in **Finland**. The corporate income tax rate is going to be reduced from the current 26% to 25%. Further reductions to 24.5% are being considered. Counteracting this reduction of the tax burden, at the shareholder level the general

capital income tax rate will rise from 28% to 30% and the tax rate will be 32% for capital income exceeding EUR 50,000 per year.

In the **United States**, a number of different plans are under discussion given that the next presidential election will take place in winter 2012. Thus, profound changes have not been announced and are hardly likely to be agreed upon before the next presidential term. Those aspects which have been announced are rather limited in scope. On the federal level, the exemption amount for dependents and individuals has been raised from USD 3,700 to USD 3,800. The standard income tax deduction will increase to USD 11,900 for married couples filing jointly. For single taxpayers and those married taxpayers filing separately, it will increase to USD 5,950. The state of Florida has announced a measure aimed at reducing its tax burden on corporations: beginning in January 2012, the Florida corporate income tax exemption will be increased from USD 5,000 to USD 25,000. In the state of Massachusetts, the corporate income tax rate is scheduled to decline starting in January 2012 from the current 8.75% to 8.0%. In the other states analysed in this study, namely California, Delaware, New York and Texas, there are many proposals for changes, but there are no reforms which are both already agreed upon and, at the same time, would influence the overall effective tax indicators.

Sustainability of Public Finances

For many years, the BAK Taxation Index has measured and compared the effective tax burden on the national and regional level. Comprehensive concepts and methods have been developed to guarantee the international comparability of the results. Up to now, the Index has focused on current taxation. Over the years, a history of taxation has evolved, which will be continued further. Yet an outlook on the future of taxation was only included insofar as changes which had already been announced were documented.

But the perspectives for future developments of tax burdens vary substantially in the countries and regions covered in the BAK Taxation Index beyond the announced changes. For the first time in 2011, the BAK Taxation Index will include a module to measure and compare the sustainability of public finances. Currently, the analysis is limited to 12 Swiss cantons and 17 European countries. This allows a further glance into possible future developments of tax burdens.

The aim of the new module for the "sustainability of public finances" is to establish and to calculate indicators on the bearing capabilities of public finances in Swiss cantons and other countries. These indicators have to allow quantitative assessment and international comparison. Based on the OECD-concept on "Fiscal Sustainability", the module provides for the first time internationally comparable results on the sustainability of the public finances in Swiss cantons. Three different time horizons are considered: short-term (2008 to 2013), mid-term (2008 to 2023) and long-term (2008 to 2060). In this summary, the focus is on the long-term outlook up to 2060.

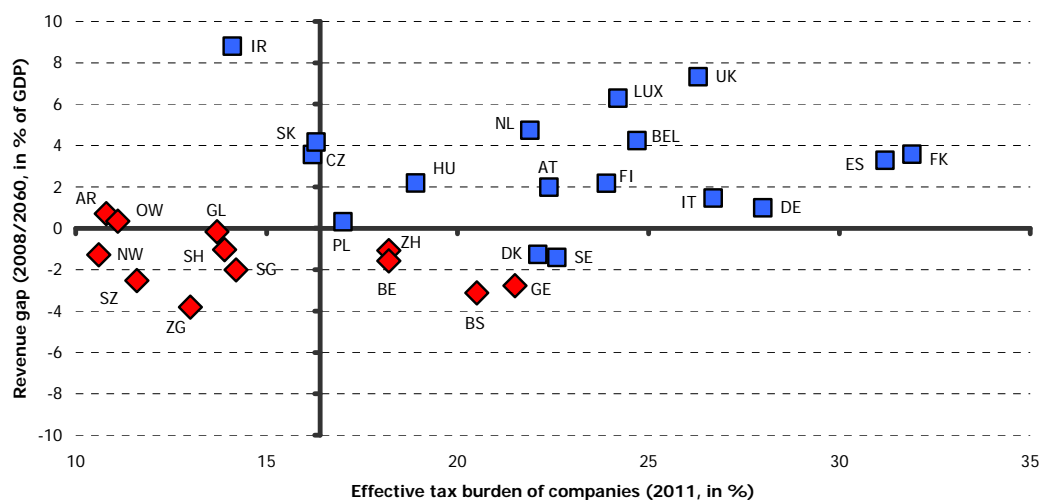
The current debt crisis with its intensive discussion of public debts and deficits has increased the awareness of sustainable public finances. The discussion has been focused almost exclusively on one issue: whether these debts are sustainable in the short term. Fiscal policy, however, has to be sustainable above all in the long term.

In addition, the turning point in demographic developments with shrinking and ageing populations, which many industrialised countries face today or in the near future will impose additional burdens on public finances. Besides the «nominal» public debt, the «implicit debt» has to be taken into account. The sum of all debts is the burden which must be carried or even reduced in the future.

Of course, sound public finances are not only an end in themselves. Rather, they are also a significant factor in the attractiveness of a location. Corporate decisions about where to set up business are influenced by many different factors, one of which being the anticipated tax burden. Hence, they also have to build expectations about future levels of taxation. Such forecasts are based not only on current tax burdens, but also on the sustainability of public finances. If fiscal policy is not sustainable, sooner or later it will be necessary to consolidate the public finances. As a rule, this includes tax increases. Hence, it is imperative for companies wrestling with long-term investment and location decisions to include the sustainability of fiscal policy in their decision-making processes.

On the basis of these considerations, Switzerland qualifies in two respects as a top location for establishing enterprises. Switzerland and its cantons are very well-positioned today in the international tax competition (see Figure 6 horizontal axis). Moreover, because Switzerland's current fiscal policy is sustainable, it may be assumed that the country will be able to defend its advantageous position.

Figure 6: Comparison of tax burden on companies (2011) and the sustainability of public finances (2008-2060)



Notes: Vertical axis: Revenue gap in % of GDP (2008-2060); Swiss cantons include municipalities and the federal government's assigned share. Excluding Norway, a statistical outlier on account of its oil revenues. Horizontal axis: Effective average tax rate for companies in %.

Red: AR: Appenzell Ausserrhoden, BE: Bern, BS: Basel-Stadt, GE: Genève, GL: Glarus, NW: Nidwalden, OW: Obwalden, SG: St. Gallen, SH: Schaffhausen, SZ: Schwyz, ZG: Zug, ZH: Zürich.
Blue: AT: Austria, BEL: Belgium, CZ: Czech Republic, DE: Germany, DK: Denmark, ES: Spain, FI: Finland, FK: France, HU: Hungary, IR: Ireland, IT: Italy, LUX: Luxembourg, NL: Netherlands, PL: Poland, UK: Great Britain, SE: Sweden, SK: Slovakia.

Source: ZEW/BAKBASEL.

If the current policies are maintained, all of the cantons in the study (Appenzell Ausserrhoden (AR), Bern (BE), Basel-Stadt (BS), Genève (GE), Glarus (GL), Nidwalden (NW), Obwalden (OW), St. Gallen (SG), Schaffhausen (SH), Schwyz (SZ), Zug (ZG) and Zurich (ZH)) will generate a revenue surplus, or at worst will be very close to doing so (cantons including their municipalities as well as a share of the federal level; see the box below on the methodology and the definition of the revenue surplus/revenue gap). Specifically, this means that if the cantons in our study stick to their current policies, ten out of 12 (BE, BS, GE, GL, NW, SG, SH, SZ, ZG and ZH) could even cut their tax revenues and still have their public debt remain below the target level of 60 percent of GDP in 2060. In Figure 6, in which the revenue gap is recorded on the vertical axis, these figures appear as negative values. For the remaining two cantons, AR and OW, the revenue gap is small enough to be closed easily in the years to come.

Internationally, by contrast, the results for fiscal policy sustainability vary considerably. Apart from Switzerland, the Scandinavian states also have sound finances. Norway (a statistical outlier on account of its oil revenue, therefore not shown in the chart), Denmark and Sweden are the only other countries that are predicted to display a revenue surplus when analysing the developments up to 2060. All other countries will have a revenue gap. In other words, unless they change their policies, they will have to increase taxes if they wish to hold their public debt at a level of 60 percent of GDP in 2060.

Among these remaining countries, however, the degree of consolidation required differs significantly. In countries such as Germany and Poland, the revenue gap is not foreseen to be more than one percent of GDP, i.e. comparatively small. By contrast, in Ireland and the UK, the situation looks especially critical. Notably, this analysis has been conducted using data from 2008 which was before these countries felt the full budgetary impact of the financial and economic crisis. Currently, the policies regarding public finance in the UK and Ireland are unsustainable over the long term. Although this does not mean that

higher corporate taxes are inevitable in these locations, it is reasonable to expect such a development. Similarly, Luxembourg's position is not sustainable either, primarily on account of the sharp increases in spending that it will have to deal with.

Even if it is felt that the reference value of 60% of GDP – the EU's Maastricht criteria – is an unsuitable target ratio for the national debt (as some might contend in Switzerland), the analysis nonetheless underscores the solidity of Swiss fiscal policy. For, of all the competing European locations in the analysis, none (with the exception of Norway) has a fiscal policy as sustainable as that of Switzerland. Like Switzerland as a country, the individual Swiss cantons are also very well-positioned, even if a few countries, for instance Denmark and Sweden, do rank better than some individual cantons.

All in all, it can be stated that the 12 Swiss cantons in the analysis not only have internationally competitive tax rates, but they are also well placed to maintain this advantage in the future.

Sustainability of Fiscal Policy: Methodology

An enhanced version of the OECD concept of fiscal sustainability is used to assess the sustainability of fiscal policy in the context of the BAK Taxation Index. The concept has a number of advantages: the time period is clearly defined, it is relatively simple to implement, the resulting sustainability indicators are easy to interpret and the quantitative results lend themselves to comparison.

The OECD concept is based on a government's intertemporal budget constraint. The resulting sustainability indicators show to what extent the present value of the final figure for the debt ratio corresponds to the predetermined target value for the public debt. To ensure that the indicators are comparable across different regions, a target value for the consolidated public debt equal to 60% of GDP is assumed for all locations in consideration. Furthermore, comparability is guaranteed by taking all levels of government into account (e.g. in Switzerland the federal, cantonal and municipality level). Results for cantons do always include a share of the federal figures, corresponding to the share of the canton in the national economy (GDP weights).

The calculations are based on a number of indicators that reflect the state of the public finances at present (public debt, primary balance) and the development anticipated if current policies are maintained (projections of revenues and expenditures). The base year of the analysis is 2008 and the period under review extends at the most to 2060.

The sustainability indicator used in this study is the revenue gap expressed as a percentage of GDP. A positive value indicates that revenues are too low to achieve a debt ratio of 60 percent of GDP in the final year – i.e., if the current fiscal policy were maintained, the debt ratio would eventually exceed 60 percent. By contrast, a negative revenue gap shows the percentage of GDP by which revenues could be reduced without causing the debt ratio to exceed the target value equal to 60 percent of GDP in 2060.

It should be noted that all analyses are based on data for the year 2008. As some of the data necessary for the calculations are only published after a substantial time delay, 2008 is the most recent year for which all information is available. To guarantee comparability, it has been decided to use only data up to 2008 and ignore any partial information for later years. Therefore, the effects of the financial and economic crises as well as the current public debt crisis are only to a small extent incorporated into these results.