# Introducing an IP-Licence Box in Switzerland: Quantifying the Effects

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### Abstract

Over the last years, the pressure on Switzerland to reform the tax treatment of companies with a special cantonal tax status has increased substantially. One element in the current discussion regarding the reform of the corporate tax system is the introduction of a licence box, in which income from patents, licences and trademarks are taxed at a lower rate. In this paper, we use a computable general equilibrium model to quantify the effects of introducing a licence box at the cantonal level in Switzerland. The results reveal that the licence box, combined with a reduction in the cantonal profit tax rate, limits the outflow of the tax base of those companies that are initially subject to the special tax treatment. However, the reduction of the cantonal profit tax rate and the fact that ordinarily taxed companies also benefit from the introduction of the licence box imply overall tax revenues to decrease.

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# 1   Introduction

The taxation of multinationals is currently one of the most salient issue with respect to tax policy. Recent tax avoidance cases relayed in the media concerning multinationals such as Starbucks or Apple have raised public awareness of how these firms take advantage of their international dimension to shift profit towards jurisdictions offering lower profit tax rates and eventually minimize their tax bill. Partly as a result of the fiscal pressure caused by the 2008 financial crisis, governments from many countries appear to be increasingly concerned about the tax avoidance practices of multinationals. Several initiatives such as the OECD/G20 action plan on base erosion and profit shifting (BEPS) have been undertaken in order to identify the most harmful international tax avoidance practices and ban them. The European commission has also put the corporate tax practices of member countries and of certain non-member countries (such as Switzerland) under scrutiny. Among others, the explicit discrimination of domestic and foreign revenues in the tax code ("ring fencing") has been identified as a practice which is not acceptable.

In order to keep tax rates attractive to mobile and profitable firms while coping with the new standards on international corporate taxation, many European countries have introduced tax allowances for revenues generated from intellectual property rights (IPR), so-called license boxes (or also "patent boxes"). In this paper, we propose a quantification of the economic and fiscal effects of switching from a tax system allowing ring fencing to a system that offers a tax-advantaged license box to qualifying firms. We analyse the recent reform proposal in Switzerland. Its main element is the abolishment of ring fencing practices and to introduce a license box system at the sub-national level (cantons). In the current system, the Swiss sub-national jurisdictions, the cantons, can offer a special tax treatment to holdings or to those companies generating most of their revenues outside Switzerland. Over the last years, Switzerland has been put under increasing international pressure to reform these special tax regimes. In a first report, the authorities proposed to abolish the special tax regimes at the cantonal level and to allow cantons to grant firms a tax allowance for revenues from IPR. In addition, the proposal foresees that cantons lower their tax rates on corporate profits by around 6 percentage points and that the federal state as well as the cantons introduce an allowance for excessive corporate equity (AECE). In a second report, the introduction of a tax on private capital gains was added as an element of the reform.

In order to quantify the effects of the reform, we calibrate a computable general equilibrium (CGE) model for the Swiss economy. In particular, the firm sector is modelled with great detail which allows us to account for the behavioural response of different types of firms to the tax reform. This enables us to identify the repercussion of the reform on the investment, finance and employment decision of Swiss firms withe a different tax status under the current tax rules. The model also quantifies the effect of the reform on

consumption choices and welfare of households. Finally, the model allows us to quantify the tax revenue shortfall or windfall associated with the reform. Using this model, we first look at the effect of the abolition of the special tax regimes on the Swiss economy. Then we show how the different elements of the reform, in particular the introduction of a license box, alter the effect of the abolition of the special tax regimes.

Assuming an elasticity of profit shifting of 1.1, our simulations show that the abolition of the special tax status generates little effect on output, investment or employment. However, foreign firms that benefited from these special tax treatments massively shift their profits outside of Switzerland (-71%) such that the tax revenue collected from these firms drop by almost 40%. The government incurs a revenue shortfall of around 2 bn. CHF which negatively impacts private consumption through the lower lumps sum transfers granted to households. The abolition of the special tax treatment has therefore an overall negative effect on households' welfare. Introducing a IP License-box reduces the share of profits shifted abroad from 71 percent to 44.6 percent. The government revenue shortfall is reduced to 320 mio. CHF in the short run and 190 mio. CHF in the long run. This reduces the negative effect on consumption in the short run and even generates a slight increase in consumption in the long run. The overall welfare effect turns out to be positive but very close to zero. If the introduction of a license box is combined with a reduction in the cantonal tax rate of 6 percentage points, the share of profits shifted abroad is further reduced to 20%. Due to the decrease in the cantonal tax rate, the revenue shortfall increases to 2.7 bn. CHF and causes a slight decrease of private consumption in the short run. However, due to positive effects on output (+0.8%), investment (+2.1%) and employment (+0.2%), the revenue shortfall is reduced to 1.2 bn. and consumption increases by 0.75% in the long run. The overall welfare effect is positive and larger than the welfare effects which apply when only a licence box is introduced. Introducing an allowance for excessive equity in the tax code reinforces the previous effects without modifying them qualitatively. Finally, introducing a tax on private capital gains does not influence the amount of profit shifted abroad but mostly offsets the positive effects on output, investment and employment generated by the other elements of the reform. In spite of the additional revenue generated by the new tax, the effect on the government budget remains negative both in the short and long run. The short run effect on consumption becomes positive but the long run positive effect is lower compared to a situation in which no tax is introduced. Finally, the overall welfare effect is positive but lower than without a tax. Note that these results depend on the value of the elasticity of profit shifting that is assumed. Since no precise empirical estimate of the elasticity is available for Switzerland, we performed simulations with different values in order to assess the sensitivity of the results.

The paper is organized as follows. Section 2 provides an overview of the different tax policy changes that are part of the reform discussion and that will be used in the

CGE analysis. Section 3 details the set up of the CGE model and Section 4 presents the simulation results. Section 5 provides a summary of the results and offers some concluding remarks.

# 2 The Swiss Corporate Tax Reform (USR III)

Starting from the first report of the steering committee for the attention of the Swiss Federal Department of Finance (FDF, 2013), the most important tax reform elements proposed by the committee are the introduction of a licences box at the cantonal level combined with a reduction of the cantonal profit tax. In addition, the committee proposes the introduction of an Allowance for Excess Corporate Equity (AECE), i.e. the deduction of a notional return on excessive corporate equity holdings from the corporate tax base.[1] One further reform element brought about by latest report of FDF and FTA (2014) is the introduction of a tax on capital gains in combination with adjustments to the existing imputation system for capital income.[2]

In the following exposition of the different reform elements we rely on the definitions stipulated in the latest report by the Swiss Federal Department of Finance and the Swiss Federal Tax Administration (FDF and FTA, 2014).

## Introduction of the Licence Box

The introduction of a licence box is seen as a promising substitute for the current tax privileges granted to the Special Purpose Companies (SPCs) at the cantonal level.[3] Licence boxes are nowadays a common tax instrument that is available in many European countries such as Ireland, Great Britain, the BeNeLux countries as well as France and Italy. Its widespread use can be taken as a signal for the conformity of licence boxes with the OECD EU guideline against harmful tax practices. From an international perspective, a licence box is a politically feasible instrument for securing the competitiveness of Switzerland in fiscal competition.[4]

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[1]While the definition of the licences box is still vague in the first report (FDF 2013), we follow in our analysis the definition of the licence box as stipulated in the second, joint report of the Swiss Federal Department of Finance and the Swiss Federal Tax Administration (FDF and FTA, 2014).

[2]The introduction of the capital gains tax has mainly the purpose of compensating the shortfall in revenue associated with the introduction of the licences box and in particular the reduction in the cantonal profit tax.

[3]Special Purpose Companies have the particular feature of either being a holding company, having the main business activity outside of Switzerland, or providing for instance financial services to a firm conglomerate. The level of cantonal taxation of these firms is around 2 to 3 percent on average.

[4]Nidwalden is the first and only Swiss canton which already introduced a licences box at the cantonal level. The current tax law in Nidwalden stipulates that only 20 percent of the corporate income qualifying for the licence box is subject to the cantonal tax rate, ensuring an effective tax burden of below 10 percent (inclusive of the federal profit tax) for income from intangible assets.

Following the latest report of the steering committee (FDF and FTA, 2014), a legal entity which owns or is the beneficiary of an intangible property right (predominantly patents) may qualify for the license box. Regarding the comprehensiveness of this measure, the committee suggests that the definition of the license box is such that on average about one third of the profits of SPC qualify for the licence box.[5] Further, the licence box is only available at the cantonal level, i.e. qualifies for a reduction in the cantonal but not the federal profit tax. In line with the cantonal tax autonomy, the applicable tax rate for income qualifying for the license box is decided upon by each canton. The definition of the tax base stipulates a maximum of 80 percent of the profits qualifying for the licence box to be tax exempt and the residual amount of profits to be taxed at the regular rate of profit tax.

Under the current tax legislation, the effective average tax burden on corporate profits amounts to about 21.8 percent. Deducting the federal profit tax of effectively 7.83 percent, the effective average profit tax burden is 13.97 percent at the cantonal level. Thus, the introduction of the license box reduces the cantonal tax burden for SPC to about 10.24 percent $(= 1/3 * 0.2 * 13.97 + 2/3 * 13.97)$.[6] Inclusive of the federal profit tax of effectively 7.83 percent, the effective tax burden for SPC adds up to 18.07 percent compared to 10.1 percent under the current system.[7]

However, not only SPC benefit from the introduction of the license box, but also regularly taxed companies. Following the assumption made by the steering committee (FDF and FTA 2014), on average 5 percent of profits of regularly taxed companies become eligible for the licence box, as well. As a consequence, regularly taxed companies face a slight windfall gain as their effective tax burden drops from initially 21.8 to about 21.24 percent $(= 0.05 * (0.2 * 13.97 + 7.83) + 0.95 * 21.8)$.

## Reduction in Cantonal Profit Tax Rate

In order to limit the increase in the tax burden for SPC after the abolition of the special tax status, the steering committee proposes the reduction of the cantonal profit tax. Given an effective profit tax burden of 21.8 percent (inclusive of the federal profit tax) across cantons under the current tax system, the committee proposes to reduce the effective profit tax burden to about 16 percent (inclusive of the federal profit tax) on average across cantons. Keeping the level of the federal profit tax rate fixed at effectively 7.83 percent, the effective cantonal tax rate has to decline by roughly 6 percentage points,

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[5]The initial report of the steering committee considered two different types the license boxes: a narrow one and a wider one. The former (latter) which covers about one third (two thirds) of SPC profits. See FDF (2013) for further details.

[6]Income qualifying for the license box is thus subject to a tax burden of 2.8 percent $(= 0.2 * 13.97)$.

[7]The higher tax burden for SPC under the license box system vis-a-vis the current system is due to the fact, that only about one third of the profits of SPC qualifies for the license box, while under the current system a much higher fraction of SPC profit income receives a preferential tax treatment.

from initially 13.97 to about 8.17 percent.

Accounting for both reform measures, the introduction of the license box and the reduction in the cantonal profit tax rate, the effective tax burden for SPCs decreases to about 13.8 percent $(= 1/3 * (0.2 * 8.17 + 7.83) + 2/3 * (8.17 + 7.83))$. Thus, the effective tax burden for SPC under the new setting is only slightly higher compared to the initial situation with an effective tax burden of around 10.1 percent.

The main beneficiaries of the reduction in the cantonal profit tax rate are the companies which are regularly taxed under the current system. For these firms the effective tax burden drops from initially 21.8 percent to about 15.67 percent $(= 0.05 * (0.2 * 8.17 + 7.83) + 0.95 * (8.17 + 7.83))$ after the introduction of the license box and the reduction in the cantonal profit tax rate.

Table 1 summarizes the changes in the effective profit tax burden for SPC and regular taxed companies arising from the different reform elements. The column "Status Quo" depicts the effective profit tax burden on cantonal and federal level under the current tax system. The neighbouring column "Abol. STS" reports the effects resulting from the abolition of the special tax status for SPCs. The next two columns report the changes in the effective profit tax burden which follows from the separate introduction of the license box and the separate reduction in the cantonal tax rate. The joint impact arising from both tax policy changes is presented in the column "LB&TR".

Table 1: Reform Induced Changes in the Effective Corporate Tax Burden

|  | Status Quo | Abol. STS | Lic.Box[1] (1) | TaxRed[1] (2) | AECE[2] (3) | LB&TR (1+2) | USR III (1+2+3) |
|---|---|---|---|---|---|---|---|
| **Special Purpose Companies** |  |  |  |  |  |  |  |
| Cantonal Level | 2.27 | 13.97 | 10.24 | 8.17 | 2.09 | 5.99 | 5.79 |
| Federal Level | 7.83 | 7.83 | 7.83 | 7.83 | 7.62 | 7.83 | 7.62 |
| Eff. Tax Burden | 10.1 | 21.8 | 18.07 | 16.0 | 9.71 | 13.82 | 13.41 |
| **Regular Taxed Companies** |  |  |  |  |  |  |  |
| Cantonal Level | 13.97 | 13.97 | 13.41 | 8.17 | 13.59 | 7.84 | 7.46 |
| Federal Level | 7.83 | 7.83 | 7.83 | 7.83 | 7.41 | 7.83 | 7.41 |
| Eff. Tax Burden | 21.8 | 21.8 | 21.24 | 16.00 | 21.0 | 15.67 | 14.87 |

[1],[2] Change in effective tax burden with respect to [1] the abolition of the special tax status for SPC, or with respect to [2] the status quo.

Source: Own Calculations

## Tax Allowance for Excess Corporate Equity (AECE)

A third reform element is the tax deductibility of a notional return on "excess" (or "security") equity capital. The latter is defined by the amount of equity capital exceeding the

companies "core" equity endowment which is necessary for the financial viability of the firm's long-run business activity. Different types of equity capital which are not eligible for the tax deduction include equity stakes in other companies, since income received from these stakes is also not taxed at the level of the holding company. Further, equity in the form of foreign held property, or equity not necessary for the business activity is also not eligible for tax deductibility.[8] The notional return deductible on excess equity should be based on the interest rate of 10-year government bonds including a surcharge of maximum 50 base points.

Thus, the reform element is in nature similar to the well known concept of the Allowance for Corporate Equity (ACE), first elaborated by the IFS Capital Taxes Group (see Institute for Fiscal Studies, 1991). While the ACE grants the tax deductibility for a notional return on all corporate equity, the Swiss reform proposal entails several corrections to the amount and type of corporate equity eligible for the tax deduction.

The main reason to implement a AECE instead of a ACE is the loss in tax revenues associated with the pure ACE. While the costs resulting from a ACE are estimated to overshoot 2 bn. CHF (about 1 and 1.15 bn. CHF at the federal level and the cantonal level, respectively), while the costs of the AECE are estimated to be around 610 million CHF in total (320 and 290 ml. CHF at the federal and cantonal level, respectively).

For ease of comparability of the different reform elements, we transform the tax benefit that is associated with the AECE into a reduction in the effective average profit tax burden at the federal and cantonal level. As reported in Table 1, the introduction of the AECE reduces the effective average profit tax burden by 0.4 and 0.8 percentage points vis-a-vis the status quo for SPC and regularly taxed companies, respectively. The last column in Table 1 shows the effective tax burden for SPC and regular taxed companies arising under the proposed tax reform. Accounting for the introduction of the license box, the reduction in the cantonal tax rate and the AECE, the tax burden for SPC amounts to 13.4 percent and the one for regular taxes companies to 14.9 percent. The tax burden for SPC increases slightly by 3.3 percentage points, while the one for regular taxed companied declines by almost 7 percentage points after the introduction of the reform.

## A Tax on Capital Gains

One last but thus not least crucial reform element entered the discussion with the latest report of the FDF and FTA 2014, which proposes the introduction of a tax on capital gains in combination with an alteration to the existing (partial) imputation system for capital income. Under the current tax system, capital gains are largely tax exempt, except

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[8]In practice, the differentiation between the excessive equity capital that is not necessary for business activity and the excess (or security) capital exceeding the core equity endowment seems to be a complex task and one of the major challenges associated with this reform element.

for capital gains arising from property (which are taxed at the cantonal level) or those occurring to unincorporated firms.

According to the latest reform proposal, capital gains in general should become subject to the personal income tax. However, a distinction is made with regard to capital gains arising from firm ownership which benefit from an imputation rate of 30 percent on federal and cantonal level, while capital gains arising from any other type of security are not eligible for any tax privilege. Thus the reform brings along an increase of the tax burden on capital income at the personal level. In the case of a taxpayer paying the maximum tax rate (36.6%) for instance, the tax burden on capital income increases from around 4.9 ($= 0.2 * 0.67 * 36.6$) and 9.7 ($= 0.5 * 19.4$) percent on corporate and unincorporated equity to 17.2 ($= 0.67 * 0.7 * 36.6$) and 12.8 ($= 0.5 * 0.7 * 36.6$) percent, respectively.[9]

The adjustment in the imputation system not only affects the taxation of capital gains but also of dividend income. While an imputation of 40 percent on the federal level and on average of round 50 percent on the cantonal level is granted to dividend income on the personal level, the reform proposal stipulates a fixed imputation rate of 30 percent. The change thus implies an increase in the personal tax burden on dividend income from initially 19.4 to about 25.6 percent.[10]

As state in the report of the steering committee, the intorodcution of the capital gain tax has no direct effect on the effective tax burden of the SPC or regular taxed companies. Nevertheless, the taxation of capital gains (and dividends) imply a double taxation of corporate profits, and thus distorts the decision of investing in firm equity or the capital market, i.e. interest bearing assets. Thus, the reform proposal again opens up a tax distortion which, as one of its major aims, was mainly closed by the by previous Swiss tax reform (USR II).

Given that the taxation of capital gains affects the tax burden on the personal but not the corporate level, this reform measure is not mirrored in Table 1.

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[9]Even though capital gains from corporate equity are largely tax exempt under the current system, we follow Keuschnigg (2006) and assume that a small amount (20 percent) of capital gains are subject to taxation due to the existing exemptions from the non taxability of capital gains in the current tax law. In addition, capital gains are taxed on realisation and not on accrual basis which implies a major tax benefit which increases with the holding period of capital gains. Assuming an average holding period of 10 and 20 years for corporate and unincorporated equity, the effective tax burden is reduced to 0.67 and 0.5 percent of the statutory tax rate (see Keuschnigg (2006) and OECD 1991). These adjustments imply an effective tax burden of 4.9 percent ($= 0.2*0.67*36.6$) on corporate capital gains at the personal level under the current system. In case of unincorporated equity capital gains are subject to taxation. However, similar to dividend income an imputation of 40 percent of capital gains is granted at the federal level and of around 50 percent on the cantonal level on average. Assuming the top marginal tax rate can be split into a federal and cantonal rate of 11.0 and 25.6, the imputation system implies an effective tax burden of 9.7 ($= 0.5*(0.6*11.0+0.5*25.6)$) percent on capital gains arising from unincorporated equity.

[10]The calculation is based on income facing an average top tax burden of 36.6 percent ($= 25.6+11.0$ on cantonal and federal level respectively), yielding an effective tax burden on 19.4 percent ($= 0.5*25.6+0.6*11.0$) under the current imputation system and an effective tax burden of 25.6 percent ($=0.7*(25.6+11.0)$) after the reform.

# 3 The Applied CGE Model

We apply a Computable General Equilibrium (CGE) model to quantify the economic effects and economy wide repercussions emanating from the Swiss corporate tax reform (USR III). The model resembles an empirically implemented neoclassical growth model with an in-depth modelling of the firm sector. Hence, the model is ideally suited to analyse the short- and long-run adjustment processes triggered by any fundamental corporate tax reform against both a theoretically and quantitative background. In addition, the dynamic feature of the model allows to capture tax capitalization effects.

The model consist of four building blocks, the firm and household sector, the government and the foreign economy (i.e. the rest of the world). Due to the two country set-up, the model enables us to analyse the impact of corporate taxation on various international dimensions such as cross border goods and capital flows as well as international tax avoidance behaviour of firms and households.

The firm sector is modelled in great detail and accounts for firms of different legal forms including incorporated and unincorporated firms which differ with regard to their inherent characteristics (such as the capital intensity or the debt equity ratio, for instance) as well as the tax treatment. In its basic set-up the firm sector represents a neoclassical investment model. While accounting for all relevant Swiss taxes levied on the federal, cantonal and municipal level, firms maximize their profits by optimal investment and finance decision as well as labour input. Thus, the model allows to identify the repercussion of fundamental changes in the Swiss tax code on the investment, finance and employment decision of Swiss firms. The firms' financial behaviour is endogenous with regard to the choice between equity and debt, while the amount of new share issues is kept constant throughout the simulations. Furthermore, mobile foreign firm profits, which, due to the tax differential between home and foreign, are shifted into Switzerland, constitute the main source of income for the Swiss Special Purpose Companies (SPC). The amount of mobile foreign firm profits shifted into Switzerland is endogenous to the model and depends crucially on the tax differential between the two countries as well as the respective elasticity for profit shifting.

The household sector consists of an representative agent who has to decide on optimal labour supply and consumption in the presence of a progressive labour tax schedule and a value added tax (VAT). The representative agents optimal consumption choice implicitly determines household savings and thus the size of optimal portfolio investments. The endogenous portfolio choice framework embedded into the model allows the household to invest its savings in different types of imperfectly substitutable assets such as equity, firm bonds, or domestic or foreign government debt. This particular feature allows us to captures the tax induced changes in international capital flows, and hence in international capital interdependencies due to the re-optimizing portfolio choices of domestic (or

foreign) households.

The government levies tax on firms and households and incurs debt. The income is spent on public consumption and the government budget is balanced via lump sum transfers to households. The different tax rates considered include the profit taxes on the federal, cantonal and municipal level as represented by the effective profit tax burden, a tax on capital income, a progressive labour tax schedule, and a value added tax. The debt to GDP ratio is fixed to its long-run average. In general equilibrium the present value of all future tax income equals government spendings plus government debt to ensure the inter-temporal budget constraint to hold and to rule out Ponzi games.

The foreign country is in structure identical to the domestic economy but modelled in less detail. It consist as well of a representative firm and household sector and the foreign government. In order to exploit the difference in corporate taxation across countries, part of foreign firm profits is shifted into the domestic economy. In line with the existing literature, we assume that the amount of profits shifted depends on the size of the tax differential between the two countries and on concealment costs.

Each of the sectors is calibrated in order to capture in detail the characteristics of the Swiss economy. The decisions of each economic agent are forward looking and originate from an inter-temporal optimization problem. Optimal behavioural responses are coordinated by prices which equalize supply and demand within each market. The most important behavioural parameters applied and the calibration of the model are discussed in the Appendix.

# 4    Simulation Results

For a better understanding of how the fundamental changes accompanying the USR III affect the Swiss economy, we start with the analysis of each reform element separately. First we analyse the effects arising from the abolition of the preferential tax treatment for special purpose companies. Thereafter we evaluate the quantitative effects arising from the introduction on the license box, the reduction in the cantonal profit tax as well as the joint effect. With regard to the allowance for excessive corporate equity, we show the effects resulting from a real ACE, i.e. if the imputed return on total corporate equity is tax deductible, as well as the reform intended allowance for excessive corporate equity, which grants the tax deductibility only for a imputed return on excessive equity. The quantitative effects arising from the introduction of the license box, the cantonal profit tax rate reduction and the allowance for excessive corporate equity is found in Table XX while Table XX shows the effect of the complete Swiss tax reform USRT III, by accounting for the taxation of capital gains in addition.

## 4.1 Abolition of Preferential Tax Status for SPCs

Under the current tax legislation, special purpose companies favour a major tax exemption form the cantonal profit tax, which grants these firms an effective tax burden of around 10.1 percent (inclusive of the federal profit tax of effectively 7.83 percent). If the special tax treatment for these companies is abolished, as requested by the OECD and the EU, the effective tax burden of these firms jumps form initially 10.1 to 21.8 percent, if no compensating measure is introduced.

Given the particular characteristic of SPC, which is having the main business activity outside of Switzerland, the income earned by these firms originates predominantly from foreign sources. Since the abolition of the preferential tax treatment of SPC diminishes the tax differential between the foreign location and Switzerland, SPC lose significantly on its (tax) attractiveness and less profits are transferred to Switzerland. As analysed in the existing theoretical literature, the amount of profits shifted depends on the elasticity of profit shifting which is denoted by $\epsilon^{PS}$. The empirical literature provides several papers dealing with this issue (see Huizinga und Laeven (2008), for instance), however, estimates for Switzerland are non-existent. Therefore, we analyse the effects resulting from the USR III for a series of different values of this elasticity. A rather low elasticity of about 0.4 (implying a semi-elasticity of about 1.07) is for instance found for Austria while other countries such as Belgium or the Netherlands, which both have a license box anchored in their text law, show a much higher elasticity of 1.13 (semi-elasticity of 2.75) and 1.05 (semi-elasticity of 2.92), respectively (see Huizinga und Laeven, 2008).[11]

Since the empirical literature does not provide any estimate for Switzerland, we have to apply the values found for countries which are comparable with Switzerland. In order to see to what extent the simulation results are affects by the choice of this elasticity, we apply different values for this parameter. The lower bound is a value of 0.4, as appropriate for Austria, while the upper bound is 1.5, a value which is even larger than the value for Belgium or the Netherlands.

If we assume a value of 1.1 for the elasticity for shifted profits w.r.t. the top tax rate, we infer from Table 2 that the tax base of SPC declines by 71.2 percent. In aggregate, the vast reduction in the tax base dominates the increase in the tax rate implying that tax revenues collected from SPC decline by about 38 percent. The loss in tax revenues equal an amount of about 1.35 bn. Swiss Franks (CHF). The overall short fall in the government budget amounts to about 2.1 bn. CHF and is thus even larger than the loss in tax revenues form SPC. The larger drop in short-run government revenues is mainly explained by the behavioural response of households. Given that the government budget

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[11]The interpretation of the respective implies that the amount foreign profits subject to taxation in Austria decreased by 10.7 percent, if the corporate tax rate in Austria is increased by 10 percentage points. Similarly, the decline in foreign profits subject to taxation in Belgium or the Netherlands amounts to 27.5 and 29.2 percent, if the corporate tax rate is increased by 10 percentage points in the respective countries.

is balanced by means of lump-sum transfers, the short fall in tax revenues retrenches household consumption (-0.59 percent in the short run) and thus causes an additional shortfall of consumption tax revenues. The limitation of household consumption and sings the welfare effect arising from the abolition of the special tax status for SPC negative. Welfare is measured by the equivalent variation and declines by 0.65 or 0.37 percent if expressed in terms of household wealth or GDP, respectively. Thus, the abolition of the preferential tax treatment of Swiss SPC implies that the loss in wealth of Swiss household due to the reforms is as large as 0.65 percent.

Table 2: Abolition of Preferential Tax Status for Special Purpose Companies (SPC)

| All Changes in % | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 0.7$ | $\epsilon^{PS} = 1.1$ | $\epsilon^{PS} = 1.5$ |
|---|---|---|---|---|
| GDP | 0.002 | 0.002 | 0.001 | 0.001 |
| Investment | 0.005 | 0.004 | 0.004 | 0.003 |
| Labour Demand | 0.001 | 0.001 | 0.000 | 0.000 |
| HH-Consumption (short-run) | 0.570 | -0.041 | -0.591 | -0.941 |
| HH-Consumption (long-run) | 0.588 | -0.025 | -0.577 | -0.929 |
| Tax Base SPC | -36.40 | -54.75 | -71.23 | -81.72 |
| Tax Revenues SPC | 37.20 | -2.328 | -37.91 | -60.53 |
| Tax Revenues SPC[2] | 1.912 | -0.120 | -1.949 | -3.112 |
| Budget Effect[2] short-run | 2.128 | -0.404 | -2.108 | -3.348 |
| Budget Effect[2] long-run | 2.116 | -0.414 | -2.117 | -3.392 |
| Welfare in % of HH Wealth | 0.659 | -0.125 | -0.653 | -1.046 |
| Welfare in % of GDP | 0.377 | -0.071 | -0.373 | -0.599 |

$\epsilon^{PS}$ denotes the Elasticity of shifted profits w.r.t. top tax rate; [2]Changes in bn. CHF;

Source: Own Calculations

As it becomes obvious from Table 2, the wealth effect for Swiss households depends strongly on the assumed elasticity of profit shifting. If the appropriate elasticity for Switzerland is even larger than the one for Belgium or the Netherlands, the loss in wealth for Swiss households could even amount to about 1 percent, namely if the correct elasticity is in the range of 1.5 instead of 1.1 percent. The rational for the larger loss in welfare refers to the even larger reduction in the tax base of SPC. If the elasticity takes an value of 1.5, the loss in taxable foreign profits adds up to more than 80 percent which implies a loss of 60 percent (or 3.1 bn. CHF) of tax revenues collected from SPC.

To the contrary, if the elasticity is much smaller, i.e. 0.4 such as the estimate for Austria for instance, the abolition of the preferential tax treatment of SPC would be beneficial in terms of welfare. Under the lower value of the elasticity, the decline in the tax base of SPC is only moderate (-36.4 percent) and hence the increase in the tax rate (from initially 10.1 to 21.8 percent) dominates the effect on tax revenues. In total, tax revenues collected from SPC increase by more than 37 percent which implies a value of

about 1.9 bn. CHF. Since the additional tax revenues are passed through to households, consumption increases by almost 0.6 percent in the long-tun. The higher consumption level features positive repercussion on the government budget, given that the consumption tax revenues increase as soon as household spendings are stimulated.

Interestingly, if the value for the elasticity is 0.7, the negative tax base effect (-54.75 percent) and the positive impact resulting from the increase in the tax rate are almost of same size and thus the impact on tax revenues collected from SPC amounts to a loss of "just" 2.3 percent, or equivalently 0.12 bn. CHF.

With respect to economy growth, Table 2 shows that the abolition of the preferential tax treatment of SPC has only a negligible effect in the real economy. The change in GDP, economy wide investment and labour demand are very small. This finding is consistent with the legal requirement that SPC are neither allowed bearing an extensive business activity nor high employment in Switzerland.

To summarize, the abolition of the preferential tax treatment for SPC has a strong negative impact on welfare, if foreign firm profits are rather mobile - what they presumably are. Thus, in order to counteract the negative welfare consequences arising from the abolition of the SPC status, the introduction of license boxes seems advisable.

## 4.2    Introduction of the Licence Box

Following the latest reform proposal (FDF and FTA 2014), the design of the licences box is such that about one third of profits of SPC, and about 5 percent of profits of regular taxed companies, qualify for this tax vehicle. Further, only 20 percent of total profits qualifying for the license box are subject to taxation at the cantonal level (but 100 percent at the federal level). Hence, the effective tax burden for SPC is reduced from initially 21.8 (as emerging after the abolition of the special tax status for SPC) to 18.07 percent for SPCs and to 21.24 percent for regular taxed companies (all figures are inclusive of the federal profit tax).

The economic effects resulting from the isolated introduction of the license box are presented in Table 3. The results are again reported for different values of the elasticity of profit shifting.

When comparing the results presented in Table 2 and 3 it becomes evident that the introduction of the license box is a probate mean to limit the outflow of foreign firm profits after the abolition of the special tax status for SPC. For a value of 1.1 for the elasticity of profit shifting, the outflow of taxable foreign profits is reduced from -71.2 to -44.6 percent which, in combination with the increase in the tax rate for SPC, completely secures the tax revenues from SPCs. Even though the adjustment process causes a decline in short run consumption and thus in overall government revenues, the long run outcome shows a

Table 3: Isolated Introduction of the Licence Box

| All Changes in % | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 0.7$ | $\epsilon^{PS} = 1.1$ | $\epsilon^{PS} = 1.5$ |
|---|---|---|---|---|
| GDP | 0.077 | 0.077 | 0.077 | 0.077 |
| Investment | 0.195 | 0.195 | 0.195 | 0.195 |
| Labour Demand | 0.019 | 0.019 | 0.019 | 0.019 |
| HH-Consumption (short-run) | 0.664 | 0.322 | -0.035 | -0.322 |
| HH-Consumption (long-run) | 0.755 | 0.422 | 0.054 | -0.242 |
| Tax Base SPC | -19.33 | -31.32 | -44.60 | -55.30 |
| Tax Revenues SPC | 44.34 | 22.87 | -0.878 | -20.03 |
| Tax Revenues SPC[2] | 2.279 | 1.175 | -0.045 | -1.030 |
| Budget Effect[2] short-run | 2.224 | 1.014 | -0.324 | -1.404 |
| Budget Effect[2] long-run | 2.360 | 1.155 | -0.187 | -1.262 |
| Welfare in % of HH Wealth | 0.815 | 0.440 | 0.026 | -0.308 |
| Welfare in % of GDP | 0.466 | 0.252 | 0.015 | -0.176 |

$\epsilon^{PS}$ denotes the Elasticity of shifted profits w.r.t. top tax rate; [2]Changes in bn. CHF;

Source: Own Calculations

minimal positive welfare effect.

For lower values of the respective elasticity, such as 0.4 for instance, the elimination of the special tax status of SPC turns out to be non sever, as the increase in the tax rate for SPC more than overcompensates the decline in the tax base of these firms. As a consequence, household consumption expands in the short- and the long-run facilitating a positive welfare outcome. In detail, the introduction of the license box limits the outflow of foreign firm profits, i.e. the change amounts to -19.3 instead of -36.4 percent, and hence tax revenues collected from SPC rise by 44.3 instead of 37.2 percent which equals an amount of 2.28 instead of 1.91 bn. CHF. As a consequence the higher household consumption level (+0.76 instead of +0.59 percent), the welfare impact measured by household wealth rises by 0.82 instead of 0.66 percent.

If however the relevant elasticity of profit shifting is above a value of 1.1, so if foreign profits currently taxed in Switzerland are more mobile than foreign profits taxed in Belgium or the Netherlands, the isolated introduction of the license box is not sufficient to grantee a positive welfare effect arising form the elimination of the special tax status for SPCs. For a value of 1.5 for the elasticity of profit shifting, the outflow of foreign firm profits is indeed reduced from -81.7 to -55.3 percent and consequently the loss in tax revenues is limited from -60.5 to -20.0 percent, i.e. form -3.1 to about -1.0 bn. CHF. Nevertheless, the financial cost associated with the reform triggers a decline in the households' consumption level and hence generates a negative welfare effect.

In contrast to the results presented in Table 2 we infer from Table 3 that the introduction of the license box as some (but only marginal) effect on the real economy. This small positive effect arises due to the fact that regular taxes firm also benefit from the

introduction of the license box. (The FDF and FTA 2015 assumes that about 5 percent of profits of regular taxed companies become eligible for the license box). In response to the slight tax benefit for regular taxed firms, a small positive effect on output (+0.08), investment (+0.2) and employment (+0.2) emerges.

## 4.3   Reduction in the Cantonal Profit Tax Rate

Given the reduction of taxable foreign firm profits after the elimination of the special tax status for SPC, the FDF and FTA 2014 propose a reduction in the cantonal profit tax rate in addition to the introduction of the license box. The committee assumes that several cantons reduce their profit tax significantly, such that the effective tax burden for companies is set at an international competitive level of about 13 percent (inclusive of the federal profit tax) while other cantons rather prefer to compete only nationally which allows to set an effective tax burden of around 20 percent (inclusive of the federal profit tax). Across cantons it is assumed that the effective tax burden is reduced by almost 6 percentage points implying an effective tax burden of 16 percent.

In the simulation we additionally consider a scenario where the reduction in the cantonal profit tax amounts on average to 4 percentage points. The lower reduction in the cantonal profit tax implies that the effective tax burden for former SPCs amounts to 15.14 instead of 13.82 percent and for regular taxed companies to 17.40 instead of 15.67 percent.[12]

Independent of the size of the applied elasticity, the larger reduction in the cantonal profit tax results in more pronounced growth effects in the real economy. In case the reduction in the profit tax amounts to almost 6 percentage points (on average across cantons), GDP grows by 0.8 percent, investment by about 2 percent and labour demand by 0.2 percent. If the reduction in the respective cantonal tax is on average 4 percentage points, the changes in GDP, investment and labour demand are significantly lower and amount to 0.58, 1.5 and 0.15 percent, respectively. The larger growth effect under the 6 percentage point reduction in the cantonal profit tax per se does not grantee the larger welfare outcome.

In case a value of 1.1 is assumed for the elasticity of profit shifting, it is straight forward, that the larger reduction in the tax rate leads to the less sever out-flow of taxable foreign profits. The latter amounts to about 20 or 27 percent under the 6 and 4 percentage point reduction in the cantonal profit tax. In terms of collected tax revenues the change in the respective tax base is largely compensated by the higher tax rate, leading to additional

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[12]Reducing the cantonal profit tax of currently 13.97 percent ($= 21.8 - 7.83$) by 4.0 percentage points implies an effective tax burden of 17.8 percent ($= 13.97 - 4.0 + 7.83$) inclusive of the federal profit tax. Accounting for the effects arising due the license box, the effective tax burden for former SPCs is reduced to 15.14 percent ($= 1/3 * (0.2 * 9.97 + 7.83) + 2/3 * 17.8$) and the one for regular taxed companies to 17.4 percent ($= 0.05 * (0.2 * 9.97 + 7.83) + 0.95 * 17.8$).

Table 4: Licence Box and Cantonal Tax Rate Reduction

| License Box & | 6% Tax Reduction | | 4% Tax Reduction | |
|---|---|---|---|---|
| All Changes in % | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 1.1$ | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 1.1$ |
| GDP | 0.801 | 0.801 | 0.582 | 0.582 |
| Investment | 2.054 | 2.054 | 1.486 | 1.486 |
| Labour Demand | 0.200 | 0.200 | 0.150 | 0.150 |
| HH-Consumption (short-run) | 0.173 | -0.079 | 0.358 | -0.016 |
| HH-Consumption (long-run) | 1.006 | 0.752 | 0.966 | 0.591 |
| Tax Base SPC | -7.611 | -19.56 | -10.80 | -26.96 |
| Tax Revenues SPC | 26.42 | 10.07 | 33.72 | 9.487 |
| Tax Revenues SPC[2] | 1.358 | 0.517 | 1.733 | 0.488 |
| Budget Effect[2] short-run | -1.768 | -2.689 | -0.426 | -1.791 |
| Budget Effect[2] long-run | -0.307 | -1.228 | 0.644 | -0.720 |
| Welfare in % of HH Wealth | 0.785 | 0.500 | 0.835 | 0.412 |
| Welfare in % of GDP | 0.448 | 0.285 | 0.477 | 0.235 |

$\epsilon^{PS}$ denotes the Elasticity of shifted profits w.r.t. top tax rate; [2]Changes in bn. CHF;

Source: Own Calculations

tax revenues of about 10.0 and 9.5 percent, or .52 and 0.49 bn. CHF. Even though, the larger tax rate reduction is more expensive in relative terms in the short-run and limits household reduction by -0.08 vs. -0.02 percent, the growth effects unfolding due to the larger tax rate reduction enables long-run consumption to increase by +0.8 instead of +0.6 percent. As a consequence, welfare in terms of household wealth rises by 0.5 and not just by 0.41 percent, if the larger reduction in the cantonal profit tax is considered.

The simulation results show however a different picture, if a lower value of 0.4 is applied for the respective elasticity. In case of less mobile foreign firm profits, the extent to which the cantonal profit tax is reduced has a crucial impact on tax revenues. Under low mobility of foreign firm profits, the reduction in the profit tax is relatively more expensive as it triggers a lower adjustment in the respective tax base. Thus, it is less likely that the positive tax base effect is strong enough to compensate the loss in tax revenues arising from the reduction in the tax rate. In figures, tax revenues rise by by 26.4 percent (1.36 bn. CHF) vis-a-vis 33.7 percent (1.73 bn. CHF) in case the reduction in the cantonal profit tax amounts to 6 vis-a-vis 4 percentage points. The larger the tax revenues the stronger the increase in short-run household consumption. The latter rises by 0.17 and 0.36 percent, respectively. Even though the larger reduction in the profit tax rate generates a higher growth effect, the long run expansion of consumption by 1.0 vis-a-vis 0.97 percent is not sufficiently large to generate a dominating welfare effect. Welfare in terms of household wealth rises by 0.79 vis-a-vis 0.84 percent indicating, that the lower reduction in the cantonal profit tax is preferable in terms of welfare.

To summarize, the simulation results in presented in Table 4 are informative and show

a surprising result. In case of a rather low value for the elasticity of profit shifting, the smaller reduction in cantonal profit tax is welfare superior, while for higher values of the elasticity, the larger tax cut leads to the more beneficial welfare outcome.

## 4.4    Allowance for Excessive Corporate Equity

A third measure to attenuate the increase in tax burden of SPC after the abolition of their special tax status is the introduction of an Allowance for Excessive Corporate Equity (AECE), i.e. the tax deductibility of a notional return on excessive corporate equity. Due to the limited empirical information on the equity endowment and particular excessive equity of Swiss SPC, we take the estimated loss in tax revenues arising from the introduction of the AECE provided by FDF and FTA (2014) and compute the corresponding reduction in the effective average tax burden for SPC arising from the AECE. As reported in Table 1, the tax benefit associated with the AECE is comparable with a reduction of 0.4 and 0.8 percentage points in the effective average tax rate of SPC and regular taxed companies, respectively. In case of latter firm type, the model structure is rich enough to implement the tax measure directly such that we do not have to resort to a reduction in the effective average profit tax.

Table 5: Licence Box, Cantonal Profit Tax Reduction, AECE

| Licence Box, AECE    & | 6% Tax Reduction | | 4% Tax Reduction | |
|---|---|---|---|---|
| All Changes in % | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 1.1$ | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 1.1$ |
| GDP | 0.902 | 0.902 | 0.696 | 0.696 |
| Investment | 2.318 | 2.318 | 1.781 | 1.781 |
| Labour Demand | 0.225 | 0.225 | 0.174 | 0.174 |
| HH-Consumption (short-run) | 0.106 | -0.112 | 0.295 | -0.040 |
| HH-Consumption (long-run) | 1.040 | 0.821 | 1.155 | 0.682 |
| Tax Base SPC | -6.700 | -17.36 | -9.792 | -24.68 |
| Tax Revenues SPC | 23.95 | 9.785 | 31.63 | 9.912 |
| Tax Revenues SPC[2] | 1.231 | 0.503 | 1.626 | 0.509 |
| Budget Effect[2] short-run | -2.312 | -3.111 | -0.990 | -2.214 |
| Budget Effect[2] long-run | -0.619 | -1.418 | 0.327 | -0.897 |
| Welfare in % of HH Wealth | 0.782 | 0.535 | 0.846 | 0.467 |
| Welfare in % of GDP | 0.448 | 0.306 | 0.484 | 0.268 |

$\epsilon^{PS}$ denotes the Elasticity of shifted profits w.r.t. top tax rate; [2]Changes in bn. CHF;
Source: Own Calculations

The introduction of the AECE facilitates an additional positive effect on growth. Under both scenarios the 6 and the 4 percentage point reduction in the cantonal profit tax rate, the growth in GDP is augmented by additional 0.1 percent points while investment and employment are boosted by additional 0.3 and 0.03 percentage points, respectively.

In line with the theoretical prediction, the supplemental reduction in the effective average tax burden accompanying the AECE limits the outflow of foreign firm profits even further. In absolute terms the outflow of foreign firm profits is limited by additional 2.2 and 1 percentage points in case of the high and low value for the elasticity of profit shifting. The differentiated reaction in the tax base under the varying elasticity has important impact on tax revenues collected from SPC. Under the larger value of the elasticity, the constricting effect of the AECE on the outflow of foreign profits is sufficiently large to counteract the revenues effect associated with the deductibility of excess equity, such that revenues collected from SPC remain largely stable. If the elasticity however takes a smaller value such as 0.4, the tax base effect is not strong enough to compensate the tax rate effect and tax revenues collected from SPC turn out to be lower by about 2.4 and 2.1 percentage points in case of the 6 and 4 percentage point reduction in the cantonal profit tax rate. Hence, the negative impact of the AECE on the government budget is more severe in case of the smaller elasticity. In the short-run, the additional decline in the government budget amounts to about 550 vis-a-vis 400 ml. CHF under the low vis-a-vis the high elasticity. In the long-run after the growth effects have unfold, the additional costs of the AECE amount to about 300 and 180 ml. CHF (again, the figures refer to the case of a low and high value for the elasticity of profit shifting).

In terms of household consumption and welfare, the introduction of the AECE on the one hand restricts slightly short-run consumption possibilities. On the other hand the AECE allows for higher long-run consumption level. In line with the above discussed revenue effects, the increase in long-run consumption is more pronounced if the elasticity takes a higher value. Similar to the changes in consumption, the positive welfare impact of the AECE is more distinct the higher the assumed elasticity of profit shifting.

On important insight to take away from Table 5 is the fact that the introduction of an AECE is more effective and more beneficial in terms of household welfare, the larger the underlying elasticity of profit shifting.

## 4.5 Capital Gains Tax

In order to complete the analysis of the Swiss tax reform USRIII, we take the taxation of capital gains and the proposed changes with regard to the imputation system additionally into consideration. While capital gains arising from corporate equity holdings are largely untaxed under the current tax law (with an exception for professional trading companies), the reform proposal stipulates a taxation of the latter but granting an imputation of 30 percent in the federal and cantonal level.[13] Accounting for the tax advantage of capital gains occurring during the holding period, the effective tax burden on corporate capital gains increases from currently about 2.81 to 9.85 percent. Given that the changes in

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[13]Capital gains arising from other securities than corporate holdings do not benefit from any imputation.

the imputation system affects unincorporated capital gains as well, the tax burden for this type of capital gains increases from 5.38 to 7.35. [14] The limitation in the existing imputation system affects the effective tax burden on dividend income as well, which rises from currently 10.76 to about 14.7 percent after the reform.

Table 6: USR III including a Tax on Capital Gains (Median Tax Rate)

| Licence Box, AECE, Tax on CG & | 6% Tax Reduction | | 4% Tax Reduction | |
|---|---|---|---|---|
| All Changes in % | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 1.1$ | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 1.1$ |
| GDP | 0.046 | 0.046 | -0.160 | -0.160 |
| Investment | 0.116 | 0.116 | -0.408 | -0.408 |
| Labour Demand | 0.012 | 0.012 | -0.040 | -0.040 |
| HH-Consumption (short-run) | 0.831 | 0.611 | 1.014 | 0.677 |
| HH-Consumption (long-run) | 0.648 | 0.428 | 0.616 | 0.279 |
| Tax Base SPC | -6.700 | -17.36 | -9.792 | -24.68 |
| Tax Revenues SPC | 23.95 | 9.785 | 31.63 | 9.912 |
| Tax Revenues SPC$^2$ | 1.231 | 0.503 | 1.626 | 0.509 |
| Budget Effect$^2$ short-run | -0.219 | -1.017 | 0.976 | -0.248 |
| Budget Effect$^2$ long-run | 0.603 | -0.195 | 1.542 | 0.319 |
| Welfare in % of HH Wealth | 0.745 | 0.498 | 0.800 | 0.422 |
| Welfare in % of GDP | 0.426 | 0.285 | 0.458 | 0.241 |

$\epsilon^{PS}$ denotes the Elasticity of shifted profits w.r.t. top tax rate; $^2$Changes in bn. CHF;
Source: Own Calculations

Table 6 shows that the full implementation of the USRIII including a tax on capital gains still leads to positive but small effects on the real economy if cantonal tax rates are decreased by 6 percentage points. Output increases by arounf 0.05 percent, investment and employment increase by 0.12 and 0.01 percent respectively. These effects are close to zero and therefore much smaller than the effects generated by the USRIII reform not including a capital gain tax as reported in Table 5. Therefore, including a capital gain tax in the reform mostly offsets the positive effects of the reform on GDP, investment and employment. If cantonal tax rates are decreased by 4 instead of 6 percentage points, the effect on these three aggregates becomes negative.

Given that the tax on capital gains and the adjustment of the imputation system affects the tax burden on the household and not the firm level, this reform element has neither an direct impact on the tax Base of SPC nor in the tax revenues collected from these firms. Therefore, the changes in the respective measures are the same as presented in Table 5. The additional tax revenues collected from capital gains liability and dividend income however impact the government budget. With a high value of the elasticity and a reduction of 6 percentage point of the cantonal tax rate, both the short and the long run

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[14]For a detailed discussion of the effective tax burden on capital gains see Section 2 of the paper.

budget effects are negative. However they are smaller than in Table 5. With a low value of the elasticity or a reduction of the cantonal tax rate of 4 percentage points, the long run budget effect becomes positive. The additional government revenue (with respect to Table 5), which is according to the model's assumption redistributed to households, enables the consumption level to increase by roughly 0.61 percent (or around 0.83 percent) in the short run, if an elasticity of 1.1 (0.4) is assumed. This effect is higher than in the case of a reform without capital gain tax (Table 5) for both values of the elasticity or of the cantonal tax decrease. However, due to the negative impact of the capital gains tax on the real economic activity, the effect on the long-run consumption level is lower than in Table 5 for both values of the elasticity or of the cantonal tax decrease. Similarly welfare effects are positive but lower than in the case where the reform is implemented without a capital gains tax.

Table 7: USR III including a Tax on Capital Gains (Top tax rate)

| Licence Box, AECE, Tax on CG & | 6% Tax Reduction | | 4% Tax Reduction | |
|---|---|---|---|---|
| All Changes in % | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 1.1$ | $\epsilon^{PS} = 0.4$ | $\epsilon^{PS} = 1.1$ |
| GDP | -0.651 | -0.651 | -0.857 | -0.857 |
| Investment | -1.617 | -1.617 | -2.121 | -2.121 |
| Labour Demand | -0.163 | -0.163 | -0.215 | -0.215 |
| HH-Consumption (short-run) | 1.251 | 1.03 | 1.410 | 1.071 |
| HH-Consumption (long-run) | 0.206 | -0.013 | 0.150 | -0.187 |
| Tax Base SPC | -6.700 | -17.36 | -9.792 | -24.68 |
| Tax Revenues SPC | 23.95 | 9.785 | 31.63 | 9.912 |
| Tax Revenues SPC[2] | 1.231 | 0.503 | 1.626 | 0.509 |
| Budget Effect[2] short-run | 0.812 | 0.014 | 1.977 | 0.753 |
| Budget Effect[2] long-run | 1.362 | 0.564 | 2.151 | 0.928 |
| Welfare in % of HH Wealth | 0.573 | 0.326 | 0.600 | 0.221 |
| Welfare in % of GDP | 0.328 | 0.187 | 0.343 | 0.127 |

$\epsilon^{PS}$ denotes the Elasticity of shifted profits w.r.t. top tax rate; [2]Changes in bn. CHF;

Source: Own Calculations

Note that the results in Table 6 assume that capital gains are subject to an effective income tax rate equal to the one faced by taxpayers with a median income. This scenario implicitly assumes that most capital gains are realized by middle-class taxpayers or that capital gains are relatively evenly distributed across taxpayers. However one cannot rule out that the biggest share of capital gains are realized by taxpayers having a high income. In such a case, due to the progressivity of personal income tax schedules at the cantonal and federal level, capital gains would be subject to a much higher effective tax rate than assumed in Table 6. To check for the robustness of our results to this case, we performed simulations assuming that capital gains are realized by taxpayers in the highest personal income tax bracket. In this case, the effective tax burden on corporate capital gains

increases from currently about 4.9 to 17.17 percent.[15] The effective tax burden on dividend rises from currently 19.4 to about 25.6 percent after the reform.

Under the assumption that capital gains are mainly realized by rich taxpayers, simulation results in Table 7 show that the taxation of capital gains leads to strong negative effect on the real economy but not necessarily on welfare. In case of the 6 percentage point reduction in the cantonal tax rate, the inclusion of corporate capital gains in the personal income tax leads to reduction in total output by 0.65 percent. Investments decline by almost 1.6 percent and employment drops by 0.16 percent. If the reduction in the cantonal tax rate amounts to 4 percentage points, the negative effects on the real economy are even more pronounced. Under this case, GDP, investment and employment decline by almost 0.86, 2.12 and 0.22 percent, respectively.

Now, even in case of a rather high mobility of foreign firm profits the reform implies a positive outcome in terms of tax revenues in the short and the long-run. The excess in government revenues, which is according to the model's assumption redistributed to households, enables the consumption level to increase by roughly 1 percent (or around 1.3 percent) in the short run, if an elasticity of 1.1 (0.4) is assumed. Due to the negative impact of the capital gains tax on the real economic activity, the long-run consumption level hardly increases or even falls below its initial values if foreign firms profits are highly mobile. Under the larger value for the elasticity of profit shifting, the decline in long-run consumption amounts to -0.013 percent under the 6 percentage point reduction in the tax rate and to -0.19 under the 4 percentage point reduction of the cantonal tax rate. The short-run benefit of higher consumption is sufficient to sign the welfare impact of the reform positive. However this welfare effect is smaller than if the reform is implemented without a capital gain tax, especially if the elasticity of profit shifting is high.

# 5    Conclusion

To be added.

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[15]Given that the changes in the imputation system affects unincorporated capital gains as well, the tax burden for this type of capital gains increases from 9.7 to 12.81.

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