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ABSTRACT

This paper uses the Global Gaidar Model (GGM) to simulate replacing a territorial corporate income tax with a wealth tax imposed in the form of a destination-based Business Cash Flow Tax (BCFT). The specific BCFT reform considered is the “BetterWay” Tax, a proposed but never enacted corporate-income tax reform. The GGM model is a 90-period OLG model, featuring 17 regions that collectively encompass the global economy. It is carefully calibrated to IMF fiscal data and the UN's region-specific fertility and mortality estimates and projections. According to the model, the BW plan produces, over a decade, increases in the capital stock, GDP, and pre-tax wages for high- and low- skilled workers of 20.5 percent, 6.8 percent, 6.3 and 7.5 percent, respectively. Over time, the capital stock and wage rates remain significantly above their baseline values. There is a smaller long-run increase in GDP as workers spend some of their higher wages on additional leisure. Despite this, the initially revenue neutral tax reform raises enough additional revenue over time to permit a reduction in personal income tax rates. This result is not predicated on unrealistic labor supply behavior. Rather it is caused by the reform's significant decrease in the marginal effective tax on U.S. investment, which induces a large influx of capital to the U.S. The main beneficiaries of the reform are today's and tomorrow's workers. We also simulate retaliatory cuts in foreign effective marginal corporate tax rates. This changes our results, but not by much. The reasons are two. First, the relative incentive to invest in the U.S. still rises dramatically. Second, Americans, who own a disproportionate amount of oversees assets, benefit disproportionately from the reduced global taxation of asset income.

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1 Introduction

This paper studies the impact of replacing the pre-2018 U.S. corporate income tax, which we model as a territorial tax, with a wealth tax levied in the form of a business cash flow tax (BCFT). The specific BCFT reform considered is the "Better Way" (BW) tax plan, proposed in 2016 by Republican members of the House Ways and Means Committee (Ryan et al., 2016). Although it was never enacted, the BW was the immediate precursor to the 2017 Tax Cuts and Jobs Act (TCJA).[1]

What is the BCFT, and why is it analogous to a wealth tax? A BCFT taxes business income less three things – domestic investment, net exports and wages. This is similar to a Value Added Tax (VAT), which is a tax on income less the sum of domestic investment and net exports, i.e. consumption. Consequently, a BCFT effectively represents a proposal to tax consumption and subsidize wages.

A single-rate VAT, applied to all products, would tax all consumption uniformly, whether paid for out of wages (current and future) or wealth. But a BCFT, applied to the production of all goods and services, would offset the tax on the component of consumption paid for out of wages. Hence, moving from a corporate income tax to a BCFT transforms business taxation into wealth taxation. More precisely, the BCFT is a proposal to tax consumption purchased out of wealth.

The BW version of business cash flow taxation doesn't represent a perfect wealth tax because it only applies to the corporate sector. Since the BW applies only to products produced by the corporate sector, not all of consumption is implicitly taxed via the VAT component of the BW plan.[2] Similarly, not all labor would benefit from the implicit wage subsidy. Private, non-corporate employees, the self-employed, government workers, and non-profit workers would fail to be implicitly subsidized through the BW's BCFT wage deduction. To keep our model tractable, we assume that all output is corporate, acknowledging from the outset that this assumption will lead us to somewhat overstate the impact of moving to a BCFT.

The paper uses the Global Gaidar Model (GGM) to simulate the BW reform. The GGM is a dynamic, 90-period OLG, 17-region general equilibrium model. It features region-specific demographics (including year-specific, albeit exogenous migration), production technologies, household preferences over consumption and leisure, and fiscal policies. The parameters of the model are carefully calibrated to 2014 IMF fiscal data and U.N. demographic estimates and projections.

Analyzing U.S. tax reform in a global model is important. The U.S. is neither a small open economy nor a large closed economy. Therefore, assuming its policies have no effect on the world interest rate or, alternatively, that its domestic investment is wholly determined by its national saving, is unrealistic. By modeling the global economy, we properly capture the impact of U.S. business tax reform on U.S. net capital inflows.

In addition to featuring multiple regions and 90 overlapping generations, GGM includes two skill

[1] The major difference is that the TCJA omitted destination-based tax treatment of net exports.

[2] For example, imputed rent on owner occupied housing is not produced by corporations.

groups as well as region and age-specific, time-varying fertility, and time-varying mortality. All told, the model, which is given 500 years to reach its steady state, contains well over 1 million unknowns and an equal number of equations. In the model's solution (equilibrium), each equation, including all budget constraints, is satisfied to a high degree of precision.

The model not only produces precise results. Its results are highly intuitive. The model's qualitative response to changes in fiscal policy, demographics, or preferences are what would be produced in a far simpler model. However, simplifying our model by reducing the number of regions, limiting the number of periods, ignoring demographics or including less detailed fiscal policy would produce far less realistic quantitative results.

We estimate that had the BW reform been implemented in 2014, the US would, after a decade (i.e. in 2024), experience increases above baseline in the capital stock, GDP, and pre-tax wages for the high and low skilled of 20.5 percent, 6.8 percent, 6.3 and 7.5 percent, respectively. In the medium term these impacts are considerably larger. In the long run, the U.S. capital stock and wage rates remain above their baseline values. This is also true, but to a far lesser degree for U.S. GDP. U.S. GDP ends up close to its baseline level due to a decline in U.S. labor supply. This, in turn, is due to an income effect associated with higher after-tax wages. Moreover, under the reform, revenue from the consumption taxation rises faster than expenditure on the wage subsidy. This permits significant reductions in personal income taxation holding constant the U.S. debt-to-GDP ratio.

Young people and future generations benefit the most from a BCFT. This reflects the importance of current and future wages in their total lifetime resources. The old are slightly worse off as the burden of higher consumption taxation outweighs the benefit of a higher rate of return on assets. The reform has little effect on intragenerational inequality, with high- and low-skilled workers impacted roughly equally. This result echoes the findings of Auerbach et al. (2017b).

Our finding of a strong supply response to U.S. corporate tax reform is pre-ordained neither by our model's construction nor its parameterization. To the contrary, the model's income effects are far more powerful than its substitution (incentive) effects. This means that cuts in our model's labor-income tax rates would lead to less, not more aggregate labor supply and generate less, not more tax revenues. Similarly, simulating personal asset-income tax cuts in our model would reduce, not increase personal saving and reduce, not increase tax revenues.

Why, then, does the BCFT induce a very strong supply-side response? The first answer is the highly elastic global supply of capital, which moves across borders at the first sign of a tax advantage. The second answer is the significant inefficiency associated with the U.S. corporate income tax, which, as of 2014, our year of calibration, had a very high marginal, but very low average tax rate.

2 Background

Prior to the 2017 U.S. tax reform, the Tax Cut and Jobs Act (TCJA), there was broad consensus that the U.S. federal corporate income tax needed reform. This consensus reflected international comparisons of statutory and marginal effective corporate income tax rates (METR). Table 1 presents pre-TCJA total (federal, state, and local) statutory tax rates calculated by Mintz and Bazel (2017), KPMG, and Ernst & Young. It also shows Mintz and Bazel (2017)'s total (federal plus state/provincial) METRs. The 17 regions, indicated in bold in table 1 and identified in table 2, are those specified in our model. Together they encompass over 99 percent of world population in 2014 and almost the entire world economy.

According to the Mintz and Bazel figures, the U.S. had the highest regional statutory corporate tax. Moreover, its METR of 34.6 percent was exceeded only by India's rate of 60.2 percent, Japan's rate of 40.9 percent, and Brazil's rate of 47.3 percent. In comparison, the WEU (Western European Union) rate was 25.4 percent, the EEU (Eastern European) rate was 15.1 percent, the UK rate was 25.0 percent, the Chinese rate was 26.0 percent, and the Mexican rate was 19.7 percent. The average METR across all non-U.S. developed countries was 19.2 percent.[3] Over half of the U.S. METR reflected federal corporate taxation. Yet federal corporate taxes collected less than 2 percent of GDP in 2017. Consequently, the federal corporate tax's main role may have been to discourage domestic investment. Shareholders could avoid the tax by relocating their investments abroad, leaving U.S. workers with fewer companies bidding for their services and less capital with which to produce. This lowers labor productivity, labor demand, and wages. The upshot is that U.S. workers can bear some, 100 percent, or more than 100 percent of the corporate tax incidence.[4]

To put the impact of the reform in perspective, we also simulate the elimination of both federal and state corporate income taxation (and their associated loopholes). Short-run effects are similar. However, the extra tax revenue from the House tax plan permits a decline, over time, in personal income tax rates. This leads workers to take more leisure, leaving long-run GDP somewhat lower under the House plan, but long-run welfare significantly higher.

Our final simulation assumes foreign regions reduce their METRs by the same percentage as the U.S. This type of response is plausible since a growing share of countries is shifting away from traditional corporate income taxation (Stein, 2018) With such foreign tax-matching, the short-run increases in capital stock, pre-tax wages, and GDP are smaller – 11.7 percent, 2.25 percent, and 6.3 percent, respectively. The long-run response is, however, remarkably similar. This reflects Americans' disproportionately large share of global assets. Although the rest of the world gradually catches up to the U.S. with respect to labor productivity, the U.S. share of global assets is roughly twice its

[3] Gravelle (2017) measures a much lower federal METR for the U.S. than Mintz and Bazel (2017). We adopt the Mintz and Bazel (2017)'s METR calculations for two reasons. First, they incorporate state and local METRs. Second, their U.S. federal government METR are close to Congressional Budget Office estimates (see Congressional Budget Office (2017)). Even if Gravelle (2017)'s METR calculations are closer to the mark, the use of Mintz and Bazel (2017) rates accommodate our goal, which is to illustrate the potential impact of business cash flow taxation, not to make definitive assessments of any particular version of such reform.

[4] To see how labor could bear more than 100 percent of the burden of a corporate tax, consider a decision by country X to tax 100 percent of corporate profits. A tax rate that high would drive all corporations out of the country and dramatically lower wages. The reduction in aggregate wages would clearly exceed tax revenue (both pre- and post-reform). Hassett and Mathur (2010) provide evidence suggesting U.S. workers may bear well over 100 percent of the burden of the U.S. corporate income tax. A policy of imposing a very high METR, all of whose revenues are rebated lump-sum, is an example of imposing a high METR that engenders a loss in worker surplus that exceeds net corporate tax collections.

Table 1: Marginal Effective and Statutory Corporate Tax Rates for Selected Countries in 2017

	Model	Mintz and Bazel METR	Mintz and Bazel Statutory	KPMG (Statutory)	E&Y (Statutory)
U.S.	**34.6**	**34.6**	**39.1**	**40.0**	**39.0**
WEU	**25.4**	**25.4**	**30.5**	**28.5**	**28.5**
of which					
France	.	38.5	38.0	33.3	30.0
Germany	.	26.7	29.7	29.8	33.0
Italy	.	6.0	28.5	24.0	24.0
Spain	.	20.0	25.0	25.0	25.0
Sweden	.	17.9	22.0	22.0	22.0
Ireland	.	13.0	12.5	12.5	12.5
Netherlands	.	21.1	25.0	25.0	25.0
JKSH	**35.5**	**35.5**	**27.6**	**27.1**	**22.3**
of which					
Japan	.	40.9	30.9	30.9	23.4
South Korea	.	30.0	24.2	22.0	22.0
Singapore	.	.	.	17.0	17.0
Hong Kong	.	.	.	.	16.5
China	**26.0**	**26.0**	**25.0**	**25.0**	**25.0**
India	**60.2**	**60.2**	**34.6**	**30.0**	**34.0**
Russia	**27.9**	**27.9**	**20.0**	**20.0**	**20.0**
Brazil	**47.3**	**47.3**	**34.0**	**34.0**	**15.0**
U.K.	**25.0**	**25.0**	**20.0**	**19.0**	**20.0**
CAN	**23.9**	**23.9**	**28.0**	**27.9**	**27.6**
of which					
Canada	.	21.0	26.6	26.5	26.0
Australia	.	28.7	30.0	30.0	30.0
New Zealand	.	20.5	28.0	28.0	28.0
MENA	**17.5**	**.**	**.**	**17.5**	**18.0**
of which					
Egypt	.	.	.	22.5	22.5
Saudi Arabia	.	.	.	20.0	20.0
Iraq	.	.	.	15.0	15.0
Jordan	.	.	.	20.0	35.0
Qatar	.	.	.	10.0	10.0
Mexico	**19.7**	**19.7**	**30.0**	**30.0**	**30.0**
South Africa	**14.3**	**14.3**	**28.0**	**28.0**	**28.0**
SAP	**25.3**	**.**	**.**	**25.3**	**25.3**
of which					
Indonesia	.	23.1	25.0	25.0	25.0
Malaysia	.	.	.	24.0	24.0
Philippines	.	.	.	30.0	30.0
SLA	**27.5**	**.**	**.**	**27.5**	**27.5**
of which					
Argentina	.	.	.	35.0	35.0
Colombia	.	23.7	40.0	34.0	34.0
Chile	.	7.8	24.0	25.5	25.5
Peru	.	.	.	29.5	29.5
SOV	**17.5**	**.**	**.**	**17.5**	**17.5**
of which					
Kazakhstan	.	.	.	20.0	20.0
SSA	**30.6**	**.**	**.**	**30.6**	**30.1**
of which				32.0	32.0
Senegal	.	.	.	30.0	30.0
Cote d'Ivoire	.	.	.		25.0
EEU	**15.1**	**.**	**.**	**15.1**	**15.1**
of which					
Belarus	.	.	.	18.0	18.0
Bulgaria	.	.	.	10.0	10.0
Ukraine	.	.	.	18.0	18.0

Regional tax rates represent GDP-weighted averages of country-specific values. For regions in which METRs from Mintz and Bazel (2017) are unavailable, we use weighted-average statutory rates from KPMG (2017).

share of capital in 2100. Thus, Americans benefit greatly from paying lower corporate taxes on assets invested abroad and the associated rise in the world interest rate. This effect almost exactly offsets the negative impact of lower wages from less capital investment from abroad.

Acronym	Region
USA	U.S.
WEU	Western Europe
JKSH	Japan, South Korea, Singapore and Hong Kong
CHI	China
IND	India
RUS	Russian Federation
BRA	Brazil
GBR	The U.K.
CAN	Canada, Australia and New Zealand
MENA	Middle East and North Africa
MEX	Mexico
SAF	South Africa
SAP	South Asia Pacific excluding Australia
SLA	Latin America excluding Mexico and Brazil
SOV	Former Soviet Central Asia
SSA	Sub-Saharan Africa excluding South Africa
EEU	Eastern Europe

Table 2: Regions in the model and their acronyms. A full list of countries in each region is included in the appendix.

3 Prior Simulation Studies

Work on the corporate income tax's economic impact and incidence traces to Harberger (1962). Harberger's seminal study prompted Shoven and Whalley (1972) – the first large-scale, albeit static, closed-economy simulation study of corporate tax reform and similar, but more detailed simulation studies, such as Fullerton et al. (1981). Bradford (1981) and Harberger (1995) are early theoretical analyses of corporate taxation in an international setting. Their work prompted simulation analysis. Gravelle and Smetters (2001) is one of the first such studies. The authors include two regions – the U.S. and the rest of the world – each of which specializes in the production of one of two traded goods. These assumptions plus the inclusion of non-traded goods strongly limit the degree to which capital shifts abroad in response to a higher domestic METR. But assuming complete specialization appears unrealistic given that virtually identical traded goods are being made in multiple countries. Indeed, many "foreign" goods are now produced domestically. Take Toyota and Volkswagon – the two largest car producers in the U.S.

Economists and other students of taxation have also long studied cash-flow consumption taxation. Schanz (1896), Haig (1921), and Colm and Simons (1938) clarified our ability to measure consumption as cash flow, specifically as income less investment (or saving). Andrews (1974) rekindled interest in cash-flow consumption taxation. His work spurred two official inquiries. *Blueprints for Basic Tax Reform* (U.S. Department of the Treasury (1977)) was conducted under the direction of Princeton economist and then Deputy Assistant Secretary of the Treasury, David Bradford. The second was the Meade Commission Report (Simon (1978)) directed by Nobel Laureate, James Meade.

Progressive personal consumption taxation, via cash flow measurement, was proposed by Seidman (1997) under the heading *USA TAX*, by Rabushka and Hall (1985) under the heading *The Flat*

Tax, and by Bradford (1986) under the heading *The X Tax*. The former two reform plans combine proportional business cash-flow taxation with progressive personal wage taxation.[5] More recent proposals for cash-flow consumption taxation include *The Growth and Investment Tax Plan*, developed by the 2005 President's Advisory Panel on Federal Tax Reform (U.S. Department of the Treasury (2005)), Auerbach (2010)'s *Modern Corporate Tax*, and Toder and Viard (2016)'s *A Proposal to Reform the Taxation of Corporate Income*.[6]

Early dynamic simulation studies of consumption-tax reforms include Summers (1981), who assumed myopic expectations, Auerbach and Kotlikoff (1983) and Auerbach and Kotlikoff (1987), who considered rational expectations, Seidman (1984), who focused on bequest behavior, Hubbard et al. (1986), who incorporated liquidity constraints, Fullerton and Rogers (1996), who considered a highly detailed, multi-good, multi-skill group framework, and Altig et al. (2001), who incorporated multiple lifetime earnings groups, kinked budget constraints, and other realistic details. These closed-economy studies showed how a switch from income to consumption taxation would impact the economy and different generations through time.

It took a number of years to develop multi-country/multi-region life-cycle simulation models carefully calibrated to demographic and fiscal aggregates and in which agents have realistic lifespans. Fehr et al. (2003), which features 3 large countries/regions, is an early example. Subsequent versions of this model by these three co-authors and others led to Fehr et al. (2013) – the closest antecedent to this paper. That paper's model features six large regions (the U.S., the EU, Russia, China, Japan plus S. Korea, and India) and simulates the complete elimination of the U.S. corporate income tax.

Fehr et al. (2013) includes many of the features of our model. It also shows that either eliminating or substantially reducing the U.S. corporate income tax rate can produce rapid and dramatic increases in U.S. domestic investment, output, real wages, and national saving. Over time, these improvements expand the tax base, which helps fund the corporate tax's reduction.

The model used in this paper is called the Global Gaidar Model, or GGM. The model used in this study was co-developed by the authors together with Maria Kazakova, Kristina Nesterova, and Andrey Zubarev of the Gaidar Institute, Victor Ye of Boston University and Marco Solera of the Inter-American Development Bank. There are five main differences between the GGM and Fehr et al. (2013). First, the GGM covers the global economy, with the latest versions including 12 additional large regions. Incorporating the global capital market is crucial for assessing precisely how much foreign investment will flow into the U.S. in response to corporate tax reform. Second, the GGM contains an energy sector as in Benzell et al. (2015). Third, the GGM is calibrated based on the latest U.N. demographic and IMF fiscal data. Fourth, the GGM is designed to start from any position of the global economy, i.e., it does not derive its initial conditions from the calculation of an initial steady state. Fifth, the GGM permits mortality to occur at all ages, not just starting at 67.

[5]The Rabushka and Hall (1985) tax introduced progressivity by exempting low earners from its personal wage tax.

[6]Grubert and Altshuler (2016) is another recent major study of tax reform, but its focus is primarily on reforming corporate taxation of foreign-based profits.

4 The "Better Way" Tax Plan

In June 2016, the House Republican caucus released its "Better Way" tax reform plan. The plan calls for major changes to business and personal taxation. This paper's focus is on the plan's business tax reform.[7] The business tax reform replaces the U.S. federal corporate income tax with a 20 percent business cash flow tax (BCFT), which permits immediate expensing of new investment and deductibility of wages, but precludes deductibility of net interest.[8] The present value benefit from immediate expensing fully offsets the present value of taxes levied on the cash flows from net investment. This makes the BCFT's METR zero.[9]

A BCFT constitutes a VAT plus a wage subsidy. Some simple accounting shows this. In (1), Y stands for GDP, gross domestic product, measured at producer prices, i.e., net of net indirect business taxes. GDP is equivalent to gross value added.

$$Y = C + I_d + X - M, \tag{1}$$

where C denotes national consumption, I_d domestic investment, X exports, and M imports. A comprehensive VAT taxes Y (value added), but it also permits deductions for domestic investment, I_d, and net exports, $X - M$. The deduction of net exports is called *destination-based* treatment of foreign transactions, alternatively destination-based border adjustment tax (BAT). It's needed to ensure that the VAT's tax base encompasses all of consumption, including consumption imported, on

[7]On the personal level, the plan reduces the number of personal income tax brackets from 7 to 3 and lowers the top income-tax rate from 39.6 percent to 33 percent. It eliminates exemptions, the Alternative Minimum Tax, and the deductibility of state income and property taxes. It increases both the standard deduction and modifies the child tax credit. We do not model these changes.

[8]Eliminating deductibility of net interest would likely dramatically lower corporate leverage, eliminate the distortion in favor or corporate borrowing, and improve business-sector stability.

[9]Pass-through business entities would face a top rate of 25 percent, which raises major concerns, not addressed here, of reclassifying personal income that would otherwise by taxed at a rate above 25 percent, as pass-through business income.

net, from abroad.[10] Business cash flow, BCF, is defined as

$$BCF = Y - I_d - (X - M) - W, \tag{2}$$

where W stands for wages. Combining (1) and (2) gives

$$BCF = C - W. \tag{3}$$

Hence, the BCFT represents a tax on consumption combined with a subsidy to wages. As with other destination-based VATs, the House tax plan's BCFT would exempt consumption of imputed rent on owner-occupied homes and durables. It would also subsidize wages, but only the wages of workers in the for-profit business sector. For these reasons, we model the House tax plan as a consumption tax combined with a wage subsidy. The current federal corporate tax system is eliminated, with the net effect of these two changes keeping revenues as a share of GDP fixed.

5 The Model

The GGM, developed in Benzell et al. (2015), Benzell and Lagarda (2017) and Benzell et al. (2018) is a computable general equilibrium model of the global economy. Versions of the model differ in the number of regions, how death and inheritances are modeled for younger agents, and other details. The model's 17 regions comprise 98 percent of world GDP. Table 2 identifies the model's regions, 7 of which are large countries. The GGM features one good, corn, which can be consumed or invested (planted).

The following description of the GGM draws heavily and sometimes verbatim from Benzell et al. (2015).

[10] Some commentators view the BAT as favoring exports over imports, i.e., as effectively imposing a tariff on imports. But, as pointed out in Auerbach et al. (2017a), and Auerbach et al. (2017b), exchange rates and domestic and foreign prices should adjust either immediately or rapidly to eliminate such a bias. Moreover, since short-run trade deficits necessarily entail long-run trade surpluses as countries receive payment for exporting more goods than they import, any positive short-run impact on revenues will be exactly offset, when measured in present value, by long-run revenue losses. Although the exchange-rate adjustments associated with a BAT has no present-value revenue impact, it can redistribute wealth among global asset holders depending on the currency composition of their assets. In the case of the House tax plan, American wealth holders could, based on their current foreign asset positions incur a non-trivial capital loss. But that assessment is based on the current currency denomination of U.S. net foreign asset holdings, which could be modified far in advance of the implementation of the reform. This said, we have run the House tax reform taking account of the capital loss that would arise under existing conditions. This loss makes essentially no difference to our findings. Another issue associated with the BAT is what would happen were it not included in the tax reform. In this case, the VAT would be origin rather than a destination based. Since, as just indicated, the BAT produces no revenue in present value, its exclusion from the reform would not change the government's long-term finances. It would, however, alter, the government's reported cash flow. Moreover, as stressed by Auerbach and Gale (2017), an origin based VAT is far easier to evade using international transfer pricing and could also induce companies to maintain their foreign operations in order to effect such tax evasion.

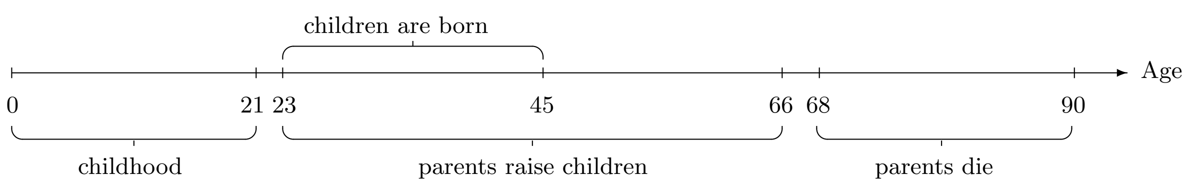
5.1 Demographics and Households

As figure 1 depicts, agents live to at most age 90, creating 91 generations in any year. Between ages 0 and 20, agents are non-working children supported by their parents. At age 21, agents enter the workforce, earn wages, consume, and save. They also leave home. As in Kotlikoff et al. (2007), between ages 23 and 45, agents give birth, annually, to fractions of children. Fractional births facilitate calibrating realistic age-distributions of each region's population, initially and through time. Agents are born into one of two skill groups. Children born to age-23 agents reach 21 when their parents are age 44. Those born to age-45 agents reach 21 when their parents are 66.

Agents face an uncertain date of death, which can occur at any age. Our model has no intentional bequests. Bequests arise solely because agents are not fully annuitized, i.e., they die with assets they had hoped to spend through the rest of their lives. Low-skilled individuals are always born to low-skilled parents, and vice versa, so there is perfect intergenerational immobility. In bequeathing to one's children, the high skilled bequeath to the high skilled and the low skilled bequeath to the low skilled.

The model also includes age- and region-specific net immigration. Every year new immigrants in each skill and age group arrive with the same number and age distribution of children and the same level of assets as natives with of the identical skill-level and age. The ratio of high to low skilled immigrants/emigrants of every age is the same as in the given country. Each region's age- and year-specific net immigration rates are set exogenously based on U.N. projections. Once immigrants join a native cohort, they experience the same age-specific fertility and mortality rates as native-born cohort members.[11]

Figure 1: The individual life-cycle



Individual saving, consumption, and labor decisions in the model are governed by a time-separable, nested, CES utility function. Omitting region-specific subscripts, lifetime utility $U_{a,t,k}$ of an agent age a at time t belonging to skill-class k takes the form:

$$U_{a,t,k} = V_{a,t,k} + H_{a,t,k}, \tag{4}$$

where $V_{a,t,k}$ records the agent's utility from their own consumption and leisure and $H_{a,t,k}$ denotes the

[11] Our surely unrealistic assumption that immigrants arrive with precisely the same skill mix and asset holdings as native-born agents greatly simplifies the model.

agent's utility from their children's consumption. The two sub-utility functions are defined by:

$$V_{a,t,k} = \frac{1}{1-\frac{1}{\gamma}} \sum_{i=a}^{90} \left(\frac{1}{1+\delta}\right)^{i-a} P_{a,i,t} \left[c(a,i,t+i,k)^{1-\frac{1}{\rho}} + \varepsilon \ell(a,i,t+i,k)^{1-\frac{1}{\rho}}\right]^{\frac{1-\frac{1}{\gamma}}{1-\frac{1}{\rho}}} \tag{5}$$

$$H_{a,t,k} = \frac{1}{1-\frac{1}{\gamma}} \sum_{i=a-23}^{22} \left(\frac{1}{1+\delta}\right)^{i-a} P_{a,i,t} K_{a,i,t,k} c_{K_{a,i,t,k}}^{1-\frac{1}{\gamma}}, \tag{6}$$

where $P_{a,i,t}$ is the probability that an agent who is age a at time t will survive to age i, $c(a,i,t,k)$ is the age-i consumption of an agent in skill class k who is age a at time t, $l(a,i,t,k)$ is the age-i leisure of an agent in skill class k who is age a at time t, $K_{a,i,t,k}$ is the number of children of an agent age a at time t in skill class k when the agent is age i, and $c_K(a,i,t,k)$ is consumption per-child at time t of an agent age a in skill class k when the agent is age i.

The parameters $\delta, \rho, \varepsilon$ and γ denote the rate of time preference, the intratemporal elasticity of substitution between consumption and leisure, the leisure preference parameter, and the intertemporal elasticity of substitution, respectively. These values are summarized in table 9. δ is region and cohort specific, while the other preference parameters are fixed across regions and time. The probability of an agent age a at time t surviving to age i is

$$P_{a,i,t} = \prod_{z=a}^{i} [1 - d_{a,z,t}], \tag{7}$$

where $d_{a,z,t}$ is the agent's probability of dying at age z conditional on surviving to that age. Fertility, immigration, and mortality rates are based on U.N. projections through 2064, the 50th year of the model's transition. IMF fertility rates for years before 2014 are also taken in by the model so as to properly assign children to parents for the purpose of bequests. After 2064, age-specific fertility rates, immigration flows, and mortality rates are set endogenously to keep births at each age, immigration, and mortality constant at 2064 levels.

Assets $\mathrm{A}_{a,t,k}$ of a skill-k agent who is age a at time t (and who survives into the subsequent period) evolve according to

$$\mathrm{A}_{a+1,t+1,k} = \left[\mathrm{A}_{a,t,k} + I_{a,t,k}\right](R_{t+1}) + w_{a,t,k}\left[h_{a,t,k} - \ell_{a,t,k}\right] - T_{a,t,k} - C_{a,t,k}, \tag{8}$$

where R_t is the pre-tax return on investment, $C_{a,t,k}$ references aggregate consumption ($c_{a,t,k} + K_{a,t,k} c_{K_{a,t,k}}$), $I_{a,t,k}$ are inheritances received in year t, $h_{a,t,k}$ is the endowment of time, $\ell_{a,t,k}$ is time spent on leisure and $T_{a,t,k}$ is net taxes (taxes paid net of pension and other transfer payments received). $T_{a,t,k}$ includes all personal taxes, including taxes on asset income, taxes on labor income and consumption taxes.

Total private assets in the model consist of government bonds, capital, and the present value of privately owned energy rents.[12] All assets have the same rate of return, so agents are indifferent about the elements of their portfolio.

5.2 The Production Sector

Each region's GDP, Y_t, equals the sum of an energy-endowment flow X_t and aggregate non-energy output Q_t:

$$Y_t = X_t + Q_t. \tag{9}$$

We include fossil fuel production in our calculation of Y_t because it is a major public and private asset, especially in petro-states like Russia. We model the endowment of energy in each region as generating an annual flow of the model's single consumption and investment good, net of extraction costs, where all regions exhaust their energy resources simultaneously.[13]

The model specifies the size of the global energy flow, how it is distributed across regions, and the share of each region's flow owned by the government. These variables are calibrated to World Bank data on the distribution of fossil fuel profits and IMF fiscal data. Each region's flow is constant until exhaustion. Since the global economy grows, the share of world GDP originating in the fossil-fuel sector declines each year until 2083 when we assume exhaustion occurs. The government's share of its region's flow of energy rents is treated as a receipt. Energy flows not owned by the government are a private asset.

Non-energy output is produced via a Cobb-Douglas technology that uses capital, K_t, and two types of labor, $L_{1,t}$ and $L_{2,t}$, i.e.:

$$Q_t = \phi {K_t}^{\alpha} {L_{1,t}}^{\beta_l} {L_{2,t}}^{\beta_h}, \tag{10}$$

where α is the share of capital income in production, β_l is the share of low-skilled labor input, β_h is the share of high-skilled labor input, and $\alpha + \beta_l + \beta_h = 1$. The parameter ϕ references total factor productivity. Firms maximize profits π_t,

$$\pi_t = Q_t - \sum_{k=1}^{2} w_{k,t} L_{k,t} - (r_t + \delta_k) K_t - T_t^k, \tag{11}$$

where $w_{1,t}$ is the wage of low-skilled workers, $w_{2,t}$ is the wage of high-skilled workers, r_t is capital's rental rate, and T_t^k is corporate taxes. Note that we are treating corporate taxation in all regions, including the U.S., as territorial.[14] The ratio of low-skilled to high-skilled workers exceeds the ratio of their factor shares. This means higher wages for the high skilled.

[12] Agents are also allowed to hold negative assets at points in their life. Therefore, there is a fourth asset, private debt, which is in zero net supply.

[13] This is clearly a crude treatment of the energy sector, but one that keeps the model simple. It captures fossil fuels' role as a major source of government income and private assets. In ongoing co-authored work we are formally modeling dirty and clean energy sectors as well as climate change and its associated damage.

[14] The U.S. nominally taxes world-wide corporate income. But it permits unlimited deferral, which appears to effectively transform the tax into a territorial levy. Indeed, discussions of the House plan have included proposals to tax repatriated retained foreign profits at extremely low rates.

Profit maximization requires

$$
\begin{aligned}
w_{1,t} &= \beta_l \phi K_t^{\alpha} L_{1,t}^{\beta_l - 1} L_{2,t}^{\beta_h}, && (12)\\
w_{2,t} &= \beta_h \phi K_t^{\alpha} L_{1,t}^{\beta_l} L_{2,t}^{\beta_h - 1}, and && (13)\\
r_t &= (1-\tau_t^k)\left(\alpha \phi K_t^{\alpha-1} L_{1,t}^{\beta_l} L_{2,t}^{\beta_h} - \delta_K\right), && (14)
\end{aligned}
$$

where τ_t^k references the METR.

5.3 The Government Sector

Every region's government raises revenues and makes expenditures. Pensions are partially paid for through a dedicated tax. All other expenditures are paid for via taxes collected from households of both skill groups and all ages, corporate tax revenues net of rebate T_t^k, energy-sector revenue X_t^g, and new borrowing ΔB_t. General expenditures consist of purchases of goods and services, C_t^g, pension payments that are not financed via payroll taxes ϱe_t, other transfer payments f_t, and interest on existing debt $r_t B_t$:

$$
\sum_{k=1}^{2} \sum_{a=21}^{90} T_{a,t,k} N_{a,t,k} + T_t^k + X_t^g + \Delta B_t = C_t^g + \varrho e_t + f_t + r_t B_t, \tag{15}
$$

where ϱ denotes the share of these pension payments financed by general revenues. The left-hand side of 15 adds all methods of finance – the sum across cohorts and skill groups of personal taxes, total corporate taxes, energy sector revenue, and net borrowing. The terms $T_{a,t,k}$ and $N_{a,t,k}$ reference personal taxes paid by cohort age a, in year t, of skill group k.

Government Revenues

In the baseline scenario, all governments first raise revenue with natural resource, corporate, and pension taxation. The remaining revenues needed to keep debt-to-GDP ratio fixed come from a mix of consumption and income taxation. The proportional elements of its income and consumption taxes are selected such that the ratio of income-tax to consumption-tax revenue remains fixed through time. This ratio is calibrated on its 2014 value. In all regions we jointly model federal and local taxation.

Consumption taxation is fully proportional. Income taxation follows

$$
R_t = \tau_t W_t + \frac{\varphi_t W_t^2}{2}, \tag{16}
$$

where R_t is total revenues from the income tax, τ_t is the endogenously calculated average income tax rate, W_t is total labor income, and φ_t an exogenously set progressivity term. For the U.S., the WEU, JKSH, CAN, EEU, SAP, MENA, SLA, and SSA this takes the value 0.3. For the other regions it is 0.

To generate realistic marginal and average corporate tax rates, we assume that agents receive, via a lump-sum rebate, a fraction of gross corporate tax revenues. This rebate is proportional to an individual's asset holdings. It is denoted $T_{a,t,k}$. The total size of the rebate is calibrated by region to match the corporate tax revenues collected in the region. For the U.S. the METR is very high, while revenues are quite small. This is reconciled in the model via a rebate of 46 percent – the highest of the 17 regions. Corporate taxes, T_t^k, equal the corporate tax rate τ_t^k times output net of labor costs and depreciation:

$$T_t^k = \tau_t^k [Y_t - \sum_{k=1}^{2} w_{k,t} L_{k,t} - \delta_K K_t] \tag{17}$$

Pension taxes on labor income are independently considered. PY_t references the aggregate payroll-tax base. PY_t differs from total labor earnings due to the ceiling on taxable wages. The ceiling for each country is reported in table 3.

The sum of the average employer plus employee payroll tax rates $\hat{\tau}_t^p$ are based on each region's total pension expenditure e_t. Thus,

$$\hat{\tau}_t^p PY_t = (1 - \varrho) e_t, \tag{18}$$

where $(1 - \varrho)$ references the share of pension expenditures that is financed via payroll taxation. Due to contribution ceilings as well as tax evasion and avoidance, statutory payroll tax rates can differ from the average payroll tax rate. Above the contribution ceiling, marginal social security contributions are zero and average social security contributions fall with the agent's income. To accommodate this non-convexity in the budget constraint, we assume that the highest earnings class in each region with a payroll tax ceiling pays payroll taxes up to the relevant ceiling, but faces no payroll taxation at the margin. The payroll tax rate adjusts to pay a region-specific constant share of contemporaneous expenditure on pensions. The remainder is funded by general government revenues. Country specific payroll tax ceilings, as a multiple of average wage income, are reported in table 3. Natural-resource revenues are assumed to be constant at 2014 levels. They therefore decline as a share of GDP until fossil fuels are assumed to deplete in 2083.

We model the House reform as implementing a proportional consumption tax plus a proportional wage subsidy. The House tax plan calls for a 20 percent VAT rate. But we assume a 15 percent rate in our model to account for the roughly 25 percent of U.S. consumption that is imputed rent from owner-occupied housing – consumption that would not be subject to the plan's 20 percent VAT. We adjust the wage subsidy rate so the House plan generates the same year-1 revenues as the corporate tax in our baseline simulation. In other words, we assume, following Auerbach et al. (2017b), that the business tax reform is revenue neutral. The resulting wage subsidy rate is 12.1 percent.

Government Expenditures

Governments in the model have two age-specific spending programs, one general expenditure program, one non-age specific transfer program, and a pension program. The two age-dependent spending programs are education and health. The general expenditure program can be thought of as defense spending, but is calibrated on all non-education and health government consumption programs. The non-age specific transfer program can be thought of as a disability program. It is a perfectly equal lump-sum transfer to all adults in the country. It is calibrated on all governmental non-pension transfers.

Age-specific per-capita purchases (i.e. on health and education) adjust to changes in the size and age structure of the population while growing at the rate of non-energy sector output growth. Other government purchases of goods and services C_t^g, such as defense spending, are fixed through time as a share of non-energy sector output.

Government spending on health care, education, and disability follow

$$E_t = \zeta Q_t \sum_{k=1}^{2} \sum_{a=21}^{90} Z_{a,t} N_{a,t,k} \tag{19}$$

where $N_{a,t,k}$ is the population at a given age, $Z_{a,t}$ is the country and spending-program specific age-expenditure profile, Q_t is non-energy sector output, and ζ is a country and program specific shift term. This term is calibrated to correctly match program expenditure as a share of GDP.[15]

In most regions, we assume an additional growth rate of 1.0 percent per year in health expenditures per capita from our initial year, 2014, through 2035.[16] In China and India, age-specific, per capita health care outlays are assumed to grow at a faster pace – 4 percent during the first 35 years of the transition. All government health care expenditures are treated as government consumption, whereas pension and non-pension transfer benefits are treated as fungible transfers to households.

As for pension benefits, consider an agent who retires in year i at the exogenously set retirement age $\bar{a}_i$. Their pension benefit $Pen_{a,t,k}$ in year $t \geq i$ when they are age $a \geq \bar{a}_i$ is assumed to depend linearly on their average earnings during their working life $\bar{W}_{i,k}$. Thus,

$$Pen_{a,t,k} = \nu_1 \bar{W}_{i,k}, \tag{20}$$

where ν is the pension-replacement rate. Table 3 reports parameters for the pension system in the model. Retirement age is the mandatory age of retirement in a country. After this age, agents make no wage income, but receive a pension benefit. The size of the pension benefit is a linear multiple of the individuals' lifetime average wage income. After retiring, pensioners' incomes are constant at this level.

For individuals alive in 2014, we assume that wages before that year were at 2014 levels, and that their lifetime productivity follows their country's 2014 age-productivity profile. The share of the pension system paid for by a pension tax is equal to the ratio of pension tax revenues to expenditures in 2014. Data on retirement ages and the pension replacement ceiling are from the World Bank

[15] Age-expenditure profiles and overall expenditure parameters for these programs are available upon request or in the replication files. Sources are summarized in appendix table 10.

[16] As shown in Hagist et al. (2009), this is a rather conservative assumption concerning future growth in health care benefit levels.

Table 3: Pension System Parameters

	Retirement Age	Pens. Taxable Income Cap (Multiple of Avg. Wage)	Share of Pens. Paid by Pension Tax	Pension Replacement Rate (ν_1)
USA	66	2.90	0.667	.8643
WEU	65	2.00	0.825	1.042
JKSH	61	1.55	0.271	0.345
CHI	60	3.00	0.583	0.210
IND	60	3.00	0.448	0.500
RUS	60	None	0.811	0.670
CAN	65	None	0.159	0.910
EEU	65	None	0.711	1.510
SAP	58	None	0.349	0.158
BRA	65	None	0.860	1.210
MEX	65	None	0.883	0.660
SAF	60	None	0.854	0.660
MENA	60	None	0.463	0.410
SLA	65	None	0.617	0.970
SSA	55	None	0.120	0.096
SOV	62	None	0.283	1.230
GBR	55	None	0.547	0.520

Reports, social security institutes' websites and Trading Economics (2017).

5.4 Solution Method and Calibration

The model is solved using Auerbach and Kotlikoff (1987)'s iterative Gauss-Seidel method. The model is given 500 years to reach its new steady state. All simulations reported below converge to a very high degree of precision. The initial year chosen for our policy simulations is 2014, which corresponds to the last year for which we comprehensive data.[17]

The solution method begins with guesses of the time paths of the world interest rate, region-specific asset holdings, and region-specific supplies of skilled and unskilled workers. The amount of capital available world wide in a given period is set equal to the that period's world-wide supply of net private assets less total world-wide government debt plus non-government owned energy flows.[18] Since this path of world-wide capital is predicated on a guess of the path of world-wide assets, it too is a guess.

Next, demand for each non-U.S. region's capital is calculated in each period based on (14) and that period's guessed levels of skilled and unskilled labor. Subtracting each period's total demand for capital across all non-U.S. regions from that period's guessed global supply of capital gives us a guess of that period's capital in the U.S.

Based on exogenously determined region-specific METRs, and the region-specific guesses of capital, we can use (12), (13) and (14) to determine each region's time paths of wage rates as well as the time path of the U.S. after-METR return to capital. Given the path of wage rates and the world interest rates, utility maximization in each region by each generation determines new temporary guesses of region-specific time-paths of total labor and asset supplies. The U.S. after-METR path of

[17]Although the House tax plan would not go into effect for a number of years beyond 2017, we believe that starting with 2014 will give essentially the same results.

[18]Debt to GDP is held fixed in the baseline as well as policy simulations. Given each country's reported initial debt-to-GDP ratio and our calculated path of GDP, we determine each country's absolute path of debt.

returns to capital is taken as our new guess of the world interest rate time path. The new guesses of the time paths of region-specific asset holdings, labor supplies, and the world interest rate are dampened with the prior guessed time paths to form the new set of guessed paths used in the next iteration.

As mentioned, we give the model 500 years to reach its new steady state. A long period is needed because the global demographic structure doesn't stabilize until 2155. In practice, the model reaches its final steady state in about 300 years.[19] Convergence is reached after all goods, labor, and capital markets clear to approximately one one-thousandth of world output.

As indicated, we calibrate the model's demographics based on U.N. population data in United Nations (2016d). The model's age-, year-, and country-specific fertility, mortality, and immigration rates are calibrated to match official projections through 2064. After 2064, fertility rates are endogenously set each year to stabilize total births. This entails gradual changes in fertility rates that lead, by 2154, in conjunction with our assumed stable net immigration rates, to a stable population and age structure in each region. We assume that 30 percent of the U.S., Canadian, Western European, Eastern European, Japanese+ and Russian work forces are high skilled. For all other regions, including China and India, we assume that 25 percent of the workforce is high skilled.

We select region-specific time-preference rates, initial labor-productivity levels, and government-consumption levels to match 2014 data, the latest year for which such data are comprehensively available. In our calibration process we use each region's initial time-preference rate as the primary means to match the observed 2014 region-specific ratio of household consumption to GDP. Table 4 documents the calibration of time preferences in the model. While the U.S. is sometimes viewed as having a high time-discount factor, that is not the value we calibrate in the model. The U.S. is calibrated as having a relatively strong preference for *delayed* consumption. This is required to prevent unrealistically high U.S. household consumption driven by the U.S.' disproportionately large share of world assets. This parameterization has important implications for the long run impact of corporate tax reform. It means that the U.S. remains a disproportionately large holder of world assets and, thus, disproportionately benefits from a global cut in corporate income taxation.

We assume that some regions' time preference rates evolve over time. We do so for the three largest countries in the model which discount the future less than the U.S. does. This prevents these countries from owning too large a share of world assets in the long run. New cohorts are born with time preferences linearly more similar to the U.S.'. New Chinese cohorts' time preference converge to the U.S.' over the course of 25 years. The preferences of cohorts in the WEU and Japan converge halfway between the original cohorts' preference and the U.S.' over the course of 50 years.

[19] Although time-augmenting technological change continues to occur after this point, this treatment of technical change ensures eventual convergence of the economy to a long-run steady state. Other formulations of technical change, such as making it labor-augmenting, preclude a steady state given the model's preferences. This would preclude using our iterative method for determining the model's equilibrium transition path, which requires the terminal conditions provided by the economy's long-run steady state. Note that assuming a higher rate of technical progress is isomorphic to assuming the economy has more agents with the same endowment of time. Clearly, adding agents to the model does not limit its ability to reach a steady state.

Table 4: Country Specific Time Preferences in the Model

Time Preference Parameter	δ-value
USA	-0.0344
WEU*	-0.0632
JKSH*	-0.0608
CHI*	-0.0352
IND	0.0792
RUS	0.0936
CAN	-0.0480
EEU	-0.0216
SAP	0.0312
BRA	0.0688
MEX	0.0528
SAF	0.0040
MENA	0.0440
SLA	0.0672
SSA	0.0024
SOV	0.0200
GBR	0.0022

Countries with (*) have a changing δ as discussed in text.

Table 5: Country Specific Initial Labor Productivity and Catchup Rates

	Initial Labor Productivity	Years to Catch-up
USA	1.000	-
WEU	0.310	30
JKSH	0.470	20
CHI	0.112	30
IND	0.056	100
RUS	0.270	45
CAN	0.580	20
EEU	0.060	45
SAP	0.075	30
BRA	0.170	30
MEX	0.200	30
SAF	0.180	100
MENA	0.068	100
SLA	0.150	100
SSA	0.035	100
SOV	0.100	100
GBR	0.700	100

Each region's initial labor productivity is the main lever for determining relative GDPs by region. Each region's per-person spending on different government programs is our key means for matching observed region-specific ratios of government consumption to GDP.

Initial region-specific labor productivity coefficients (efficiency units per worker) are calibrated to match each region's initial level of per capita GDP. The age- and year-specific productivity profile of a low- or high-skilled worker age a in period t is given by

$$E(a,t) = \xi(a,t)e^{4.47+0.033(a-20)-0.00067(a-20)^2}(1+\lambda)^{a-21}, \tag{21}$$

This profile is that used by Auerbach and Kotlikoff (1987). The labor productivity parameter ξ is country and cohort specific. The U.S. coefficient is fixed at 1. Based on the data, every other region's labor productivity coefficient starts below 1. But we assume convergence to 1, i.e., each region's workers eventually achieve the U.S. labor-productivity level. This convergence occurs on a cohort-by-cohort basis. Thus, successive cohorts become more productive as they reach age 21 and enter the workforce. Our initial conditions incorporate the assumption that all cohorts alive in 2014 in a given region have the same level of productivity. All countries identically experience λ, 1 percent time augmenting productivity growth in every year. Table 5 reports initial productivity levels and catch-up periods in the model.

We set each region's initial debt-to-GDP ratio to ensure that the model's interest payments are the same share of GDP as observed in the 2014 data.[20] Other fiscal parameters determining per capita government spending on health care, education, and general outlays are set to match observed expenditures as a share of GDP.

All our simulations keep debt fixed as a share of GDP in each region. In the baseline simulation and our first policy simulation, which eliminates all U.S. corporate taxation (i.e., sets the U.S. METR

[20]The debt-to-GDP ratio is set at a negative value for regions with positive net government assets.

and corporate-tax rebate to zero), income and consumption tax rates adjust to balance the budget. In our second two policy simulations – the House tax plan and the House tax plan but in the context of other regions cutting their METRs by the same percentage as the cut in the U.S. METR – we fix the consumption tax rate and adjust the income tax rate to achieve budget balance. This reflects our modeling of the House tax plan as establishing an explicit consumption tax rate plus a wage subsidy. Convergence in our policy simulations is as accurate as convergence in our baseline.

Relative asset holdings in each country are set to match data on privately held assets from Credit Suisse (2017). Initial age-asset distributions in each country are set to match the asset age-distribution reported in the U.S. Survey of Consumer Finances (Bricker et al. (2014)).[21] The overall level of private assets in the world is set to generate an initial interest rate of about 5 percent.

Fossil fuel rent data is taken from The World Bank (2014). The level of fossil fuel rent flows in each region in is set to correctly match their true shares of GDP. The share of this flow owned by the government is selected to match the natural resource revenue share of government income.

5.5 Matching the Data

As table 6 shows, our model's region-specific 2100 total population counts match the U.N.'s projections very well in general and extremely well in particular cases. For example, the model predicts the U.S. population at 446.1 million at the end of the century, which is within 1 percent of the U.N. projection of 447.6 million. Another example is China. The model predicts China's 2100 population at 978.9 million. This is within 3 percent of the U.N.'s 1003.0 million estimate. The largest year-2100 population-projection discrepancies – both 6.2 percent – are those for the Middle East and North Africa (MENA) and the South Asia Pacific.

In reporting the model's region- and year-specific fertility rates, we double the model's rates for comparability with real-world projected rates. The fertility rate is defined by the U.N. as births per woman of child-bearing age.

Table 7 compares the model's projected fertility rates with those of the U.N. for 2100. Again, we see a reasonably close correspondence between the model's and the U.N.'s projections. The U.N. puts the U.S. fertility rate at 1.89 children per woman of child-bearing age in 2014, rising to 1.93 in 2100. These values are both within 9 percent of the model's rates of 2.04 in 2014 and 2.12 in 2100. Another example of a good fit is the case of Canada for which the model's fertility rates for 2014 and 2100 are within 2 percent of official numbers. The worst fit is for the Eastern European Union (EEU). The U.N. puts that region's fertility rate at 1.54 in 2014 and 1.83 in 2100. The model's rates are 1.03 and 1.98, respectively. These discrepancies notwithstanding, the model tracks the EEU's total

[21] The Survey of Consumer Finances gives average household net worth for households with heads in different age-brackets. These brackets are: under 35, 35-44, 45-54, 55-64, 65-74, and 75+. We assume asset holdings for individuals in the interior brackets are flat with respect to age. For individuals between 21 and 35, we linearly interpolate assets between 0 for 21 year olds and the 35 year-old level. We do the same for 75+, assuming 90 year-olds have no assets. The age-asset path of high skilled workers is proportional to low skilled workers, but multiplied by the high skill wage premium in 2014.

population and age structure through 2100 quite well.

Table 8 compares projected and modeled population age structures for 2014 and 2100. Because the 2014 U.N. population counts by age are part of the model's initial conditions, the model's 2014 age structure conforms exactly to the data. What's remarkable is how well, generally speaking, the model tracks regional age structures through time. For the U.S, the UN predicts 11.3 percent of the population will be between the ages of 20 and 29 in 2100, with 21.7 percent between the ages of 70 and 90. The model's shares are 10.9 percent and 21.8 percent, respectively. Another example is SLA, which groups Latin and Central America nations excepting Mexico and Brazil. In 2100, the U.N. SLA population shares at ages 20-29 and 70-90 are 10.6 percent and 23.6, respectively. The corresponding model's shares are 10.5 percent and 23.2 percent.

Table 9 considers the match between the IMF and the GGM measures of 2014 macro indicators. The GGM does an excellent job matching region-specific relative GDPs, ratios of private and government consumption to GDP, shares of world assets,[22] and fossil-fuel rents as shares of GDP. Table 10 shows the precision of our government fiscal policy calibration. Aggregate macroeconomic variables, such as relative GDPs, fossil fuel profits as a percent of GDP, and shares of world assets are also calibrated. Our calibration strategy entails targeting IMF-observed region-specific expenditure shares and letting the GGM's tax rates adjust accordingly.[23] Table 10 shows a tight fit of the model to these government spending shares.

The endogenous revenue shares do not line up as closely. This reflects two things. First, some regions ran larger deficits in 2014 than maintenance of a fixed debt-to-GDP ratio would entail. The U.S. is a good example. The IMF's accounting suggests the U.S. government (federal, state, and local) deficit was 5.7 percent of GDP in 2014, which is far higher than the 2.6 percent real GDP growth recorded in that year. As indicated, our baseline as well as policy simulations assume a fixed ratio of debt-to-GDP. Consequently, the GGM, which produces about a 1 percent growth rate in GDP in 2014, extracts more general revenue.[24] Second, the GGM includes no aggregate risk. Hence, the model has no equity premium; i.e., the government borrowing rate equals the world interest rate. Since we calibrate each region's initial debt level to match observed government net interest payments as a share of GDP, our initial government debt levels are lower than the official figures. Stated differently, since the interest rate in our model exceeds, for most regions, the actual rate paid by governments, we reduce the initial debt to match government interest payments as a share of GDP.

[22]The SAF and SOV asset shares in the GGM are positive, but less than 0.1 percent.

[23]Pension revenues as a share of GDP appear to be particularly low in both the IMF and GGM measures. The reason is that these revenues reference only taxes collected to cover retirement benefits; i.e., the IMF allocates other pension-system outlays, such on disability benefits, to "Transfers and Benefits Different from Pensions.

[24]To be clear, the GGM can be run with policies that entail increases or decreases over an extended period in the debt-to-GDP ratio. But our focus here is on evaluating U.S. tax reform, not U.S. or foreign deficit policies.

Table 6: U.N. and GGM Population Projections

Total Population (millions)

	USA		WEU		JKSH		CHI		IND		RUS		BRA		GBR		CAN	
	2014	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**
Model	317.5	446.1	594.1	576.9	188.0	135.8	1367.6	978.9	1294.3	1614.1	143.1	112.3	205.8	195.5	63.8	81.8	63.3	96.0
Official	317.5	447.6	594.1	581.6	188.0	134.0	1367.6	1003.0	1294.3	1658.5	143.1	117.2	205.8	200.0	63.8	81.7	63.3	97.6

	EEU		MENA		MEX		SAF		SAP		SLA		SOV		SSA	
	2014	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**
Model	84.8	48.9	726.8	1398.9	125.1	142.8	53.9	67.2	820.3	903.1	278.9	362.2	82.8	108.2	723.1	3424.5
Official	84.8	49.7	726.8	1491.4	125.1	148.1	53.9	65.7	820.3	963.5	278.9	360.5	82.8	106.5	723.1	3272.9

Table 7: U.N. and GGM Fertility Rates

UN Fertility Rate (Children per Woman)

	USA		WEU		JKSH		CHI		IND		RUS		BRA		GBR		CAN	
	2014	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**
Model	2.04	2.12	1.55	1.78	1.42	1.50	1.68	1.73	2.85	1.68	1.53	1.69	1.98	1.81	1.89	1.86	1.85	1.79
Official	1.89	1.93	1.65	1.84	1.30	1.69	1.55	1.81	2.48	1.80	1.66	1.91	1.82	1.79	1.92	1.89	1.86	1.81

	EEU		MENA		MEX		SAF		SAP		SLA		SOV		SSA	
	2014	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**
Model	1.03	1.98	4.00	1.74	2.15	1.95	2.30	1.96	2.55	2.01	2.50	2.03	2.71	1.93	5.24	2.16
Official	1.54	1.83	3.25	1.82	2.29	1.79	2.40	1.80	2.51	1.83	2.37	1.82	2.60	1.89	4.93	2.09

Table 8: U.N. and GGM Age Distributions

Model Age Structure (% of Total Population)

		USA		WEU		JKSH		CHI		IND		RUS		BRA		GBR		CAN	
		2014	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**
0-9	Model	12.7	11.6	11.5	9.9	8.7	9.1	11.7	8.5	19.5	9.2	11.7	11.6	15.0	9.5	12.4	9.0	11.8	9.7
	Official	12.7	10.8	11.5	9.7	8.7	8.2	11.7	8.8	19.5	9.7	11.7	11.2	15.0	9.1	12.4	10.1	11.8	9.8
10-19	Model	13.1	11.7	11.5	10.1	10.1	9.0	11.6	9.7	19.2	10.0	9.3	11.6	17.0	9.5	11.5	9.7	11.9	10.3
	Official	13.1	11.0	11.5	10.0	10.1	8.6	11.6	9.4	19.2	10.2	9.3	11.8	17.0	9.5	11.5	10.4	11.9	10.2
20-29	Model	14.1	10.9	12.8	10.5	11.5	9.0	17.5	9.2	17.7	10.7	15.7	11.8	16.7	10.0	13.6	10.9	14.2	10.5
	Official	14.1	11.3	12.8	10.4	11.5	9.1	17.5	9.9	17.7	10.7	15.7	12.2	16.7	9.9	13.6	10.8	14.2	10.5
30-39	Model	13.0	11.6	13.9	11.3	13.8	10.1	14.2	9.7	14.8	11.4	15.5	12.0	16.3	10.0	13.0	11.0	13.6	11.2
	Official	13.0	11.4	13.9	10.7	13.8	9.9	14.2	10.0	14.8	11.2	15.5	11.8	16.3	10.4	13.0	10.9	13.6	10.9
40-49	Model	13.2	11.1	14.5	11.1	15.2	9.8	17.8	10.4	11.5	11.9	13.0	12.6	13.2	10.5	14.3	11.9	13.7	11.2
	Official	13.2	11.5	14.5	11.1	15.2	10.4	17.8	10.7	11.5	11.9	13.0	12.5	13.2	10.9	14.3	11.3	13.7	11.3
50-59	Model	14.1	10.7	13.4	11.7	13.4	10.4	12.7	11.2	8.7	12.2	15.4	12.9	10.6	11.7	13.0	12.0	14.2	11.6
	Official	14.1	11.3	13.4	11.5	13.4	10.9	12.7	11.6	8.7	12.3	15.4	12.9	10.6	11.4	13.0	11.4	14.2	11.3
60-69	Model	10.7	10.5	10.9	11.1	12.9	11.0	9.0	11.7	5.3	12.2	10.2	10.4	6.5	12.0	11.1	11.7	10.9	10.4
	Official	10.7	10.9	10.9	11.2	12.9	11.6	9.0	11.6	5.3	12.4	10.2	10.8	6.5	11.9	11.1	10.9	10.9	11.0
70-90	Model	9.0	21.8	11.6	24.9	14.4	30.5	5.6	29.7	3.3	22.4	9.2	17.1	4.7	26.0	11.2	23.8	9.7	25.2
	Official	9.0	21.7	11.6	25.4	14.4	31.3	5.6	28.0	3.3	21.7	9.2	16.8	4.7	27.0	11.2	24.2	9.7	25.1

		EEU		MENA		MEX		SAF		SAP		SLA		SOV		SSA	
		2014	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**	**2014**	**2100**
0-9	Model	10.7	9.9	23.9	10.7	18.6	8.2	20.2	10.7	18.4	13.0	18.6	9.6	19.8	12.6	31.6	16.7
	Official	10.7	9.6	23.9	10.1	18.6	8.9	20.2	10.9	18.4	9.9	18.6	9.8	19.8	10.9	31.6	14.1
10-19	Model	10.0	10.0	19.8	11.0	19.0	9.6	19.2	11.9	18.3	10.1	18.3	10.1	16.3	11.1	23.0	15.0
	Official	10.0	10.3	19.8	10.6	19.0	9.3	19.2	11.4	18.3	10.3	18.3	10.3	16.3	11.5	23.0	14.2
20-29	Model	14.8	10.1	18.5	11.6	17.3	10.1	19.6	12.1	17.1	8.9	17.3	10.5	19.6	11.3	16.8	13.8
	Official	14.8	10.6	18.5	11.3	17.3	9.7	19.6	12.0	17.1	10.7	17.3	10.6	19.6	11.8	16.8	14.0
30-39	Model	14.9	10.3	14.6	12.1	15.2	10.4	14.6	12.3	15.5	9.1	14.6	10.8	14.5	10.8	11.8	13.5
	Official	14.9	10.5	14.6	11.9	15.2	10.1	14.6	12.4	15.5	11.0	14.6	10.8	14.5	11.6	11.8	13.6
40-49	Model	13.5	11.5	9.9	12.7	12.4	10.7	10.9	12.8	12.8	9.5	11.7	11.9	11.6	12.2	7.5	12.5
	Official	13.5	11.4	9.9	12.2	12.4	10.8	10.9	12.7	12.8	11.4	11.7	11.4	11.6	12.0	7.5	12.8
50-59	Model	14.6	12.2	6.8	12.8	8.4	11.3	8.0	12.4	9.3	11.2	9.1	12.2	9.9	11.4	4.8	11.9
	Official	14.6	12.1	6.8	12.4	8.4	11.4	8.0	12.7	9.3	12.1	9.1	11.8	9.9	12.5	4.8	11.5
60-69	Model	10.9	11.8	3.9	11.3	5.1	11.7	4.4	11.9	5.1	11.3	5.9	11.8	4.6	10.3	2.9	9.2
	Official	10.9	11.5	3.9	11.5	5.1	12.0	4.4	11.8	5.1	12.2	5.9	11.8	4.6	10.9	2.9	9.6
70-90	Model	10.6	24.2	2.6	18.0	4.0	28.0	3.2	16.0	3.5	27.0	4.7	23.2	3.7	19.3	1.7	7.7
	Official	10.6	24.0	2.6	19.9	4.0	27.8	3.2	16.0	3.5	22.4	4.7	23.6	3.7	18.9	1.7	10.2

Table 9: IMF and GGM 2014 Macro Indicators

	USA	WEU	Japan	China	India	Russia	BRA	GBR	CAN
Gross Domestic Product (PPP) as share of U.S.									
Data	100.0	93.2	41.4	105.4	42.3	21.1	18.9	15.0	16.4
Model	100.0	93.4	40.8	105.4	42.6	22.1	18.6	16.8	17.2
Private Consumption (% of GDP)									
Data	68.5	55.9	53.5	36.6	60.4	54.4	63.4	64.4	56.2
Model	68.3	55.4	53.0	36.3	60.7	53.9	62.9	65.7	56.6
Government Consumption (% of GDP)									
Data	19.3	24.8	15.3	19.1	16.6	24.3	24.6	25.9	23.4
Model	19.2	26.0	15.3	19.5	17.1	25.5	26.2	27.0	23.2
Share of Total Assets									
Data	31.2	26.1	11.2	8.2	1.3	0.8	1.2	5.8	6.0
Model	32.0	23.0	11.0	8.0	1.0	1.0	1.0	6.0	5.0
Fossil Fuel Rents as % of GDP									
Data	0.9	0.2	0.0	1.2	1.1	13.8	2.4	4.7	3.8
Model	0.9	0.3	0.0	1.2	1.2	14.9	2.9	4.6	4.4

	MENA	MEX	SAF	SAP	SLA	SOV	SSA	EEU
Gross Domestic Product (PPP) as share of U.S.								
Data	38.2	12.5	4.1	34.9	22.0	4.1	12.3	5.1
Model	37.7	13.1	5.0	35.6	22.5	5.1	12.4	4.2
Private Consumption (% of GDP)								
Data	51.3	68.6	60.6	59.3	64.8	52.7	70.4	51.0
Model	51.2	68.9	61.1	59.5	65.0	53.6	68.6	51.0
Government Consumption (% of GDP)								
Data	24.7	14.8	20.0	14.0	19.1	20.5	20.7	22.7
Model	25.2	14.0	19.4	13.8	19.2	19.7	20.2	23.5
Share of Total Assets								
Data	2.0	0.9	0.3	2.9	1.1	0.2	0.4	0.4
Model	3.0	1.0	0.0	2.0	1.0	0.0	0.4	0.3
Fossil Fuel Rents as % of GDP								
Data	25.3	5.9	0.0	1.2	4.2	2.2	9.4	14.3
Model	26.8	6.9	0.0	1.5	4.9	3.2	9.8	13.8

Table 10: Government Finances in 2014: Model and Real Data

	USA		WEU		JKSH		CHI		IND		RUS		BRA	
	Data	Model	Data	Model	Data	Model	Data	Model	Data	Model	Data	Model	Data	Model
Total Expenditures	33.5	32.8	44.1	45.3	25.1	25.5	24.3	24.3	27.0	26.8	37.9	39.3	37.3	38.2
Health	7.8	8.0	5.6	5.9	3.5	3.6	1.5	1.5	1.0	1.1	3.9	4.1	2.6	3.0
Education	5.1	5.0	4.6	4.9	1.4	1.4	3.9	3.9	2.8	2.9	4.4	4.8	5.4	5.9
Purchases of G&S excl. Health and Education	6.4	6.2	14.6	15.2	10.4	10.3	13.8	14.1	12.8	13.1	16.0	16.7	16.6	17.4
Pension Benefits	8.5	8.2	13.4	13.3	7.7	7.7	2.6	2.5	4.1	4.2	8.9	9.2	6.9	6.9
Transfers & Ben Different from Pensions	5.1	4.8	3.9	4.1	2.7	2.8	2.4	2.2	1.7	1.8	3.9	4.1	1.0	1.1
Net Payment on Debt/Assets	0.6	0.5	2.0	1.9	-0.5	-0.3	0.2	0.2	4.5	3.7	0.7	0.5	4.8	4.0
General Government Revenues	27.8	32.5	38.5	45.0	20.0	25.5	22.7	24.3	19.8	25.3	36.6	39.2	30.6	36.3
Tax Revenues	21.8	26.7	27.4	34.0	14.3	23.4	20.9	22.5	17.6	23.2	18.2	19.7	22.9	28.4
Corporate Tax	3.2	3.1	2.9	3.0	3.6	3.6	4.1	4.1	3.9	3.8	3.1	3.5	4.1	4.4
Consumption Tax	9.8	12.4	16.8	18.1	6.4	9.5	15.7	17.2	11.7	16.4	11.3	12.1	16.4	20.9
Income Tax	8.8	11.2	7.6	12.9	4.4	10.3	1.1	1.2	2.0	2.9	3.8	4.1	2.5	3.1
Non Tax Revenues	6.0	5.8	11.1	11.1	5.7	2.1	1.8	1.8	2.2	2.2	18.4	19.5	7.7	7.9
Social Security Contributions (Pensions)	5.7	5.5	11.0	11.0	5.7	2.1	1.5	1.5	1.9	1.9	7.2	7.4	6.0	5.9
Other	0.3	0.3	0.1	0.1	0.0	0.0	0.3	0.3	0.3	0.3	11.1	12.1	1.7	2.0

	GBR		CAN		MENA		MEX		SAF		SAP		SLA	
	Data	Model	Data	Model	Data	Model	Data	Model	Data	Model	Data	Model	Data	Model
Total Expenditures	43.7	45.6	35.6	34.7	33.2	33.8	22.6	21.1	32.1	30.7	20.5	20.0	28.1	28.0
Health	7.6	8.0	6.7	6.7	0.9	1.0	3.5	3.3	1.4	1.3	0.6	0.6	4.1	4.2
Education	5.2	5.4	5.1	5.1	1.2	1.2	4.4	4.2	1.9	1.8	0.6	0.6	4.0	4.2
Purchases of G&S excl. Health and Education	13.1	13.6	11.6	11.5	22.6	23.1	6.9	6.5	16.7	16.2	12.8	12.7	10.9	10.7
Pension Benefits	13.9	14.1	9.7	9.3	2.1	2.0	3.2	3.2	4.8	4.7	1.5	1.6	5.8	5.8
Transfers & Ben Different from Pensions	2.6	2.8	1.5	1.5	5.0	5.3	2.1	2.0	4.2	4.0	3.0	3.0	1.9	1.8
Net Payment on Debt/Assets	1.3	1.6	1.0	0.6	1.4	1.3	2.5	2.0	3.1	2.6	1.9	1.6	1.3	1.3
General Government Revenues	38.0	45.4	32.1	34.4	35.0	33.0	18.8	19.8	28.0	28.5	18.6	18.8	23.6	27.4
Tax Revenues	26.6	36.0	28.7	30.8	14.6	11.4	12.9	13.5	23.9	24.4	17.6	17.7	17.1	20.4
Corporate Tax	6.0	6.0	4.5	4.5	2.9	2.7	2.1	2.0	5.3	4.4	3.9	3.8	3.0	2.9
Consumption Tax	13.0	25.4	11.7	13.4	10.3	7.6	8.4	8.9	9.7	10.5	11.8	11.9	13.3	16.4
Income Tax	7.6	4.7	12.4	12.9	1.4	1.1	2.4	2.6	8.9	9.6	1.9	1.9	0.8	1.1
Non Tax Revenues	11.4	9.4	3.4	3.6	20.4	21.6	5.8	6.3	4.1	4.1	1.0	1.1	6.5	7.0
Social Security Contributions (Pensions)	7.6	7.7	1.5	1.5	1.0	0.9	2.8	2.9	4.1	4.0	0.5	0.6	3.6	3.6
Other	3.8	1.7	1.9	2.1	19.4	20.6	3.0	3.5	0.0	0.0	0.5	0.6	2.9	3.5

	SOV		SSA		EEU	
	Data	Model	Data	Model	Data	Model
Total Expenditures	32.3	31.3	27.2	25.7	40.7	41.1
Health	0.8	0.8	1.0	1.0	1.9	1.9
Education	1.4	1.3	1.4	1.5	2.1	2.2
Purchases of G&S excl. Health and Education	18.3	17.5	18.3	17.6	18.7	19.4
Pension Benefits	7.5	7.4	0.8	0.8	14.3	14.5
Transfers & Ben Different from Pensions	3.3	3.3	4.0	3.6	1.9	1.5
Net Payment on Debt/Assets	1.0	0.9	1.7	1.1	1.9	1.5
General Government Revenues	24.8	31.0	23.9	24.7	38.3	40.7
Tax Revenues	20.9	26.1	19.9	20.5	24.9	24.7
Corporate Tax	3.7	3.8	2.8	2.8	4.1	3.9
Consumption Tax	13.6	17.7	14.2	14.8	16.2	16.2
Income Tax	3.5	4.6	2.8	2.9	4.6	4.6
Non Tax Revenues	4.0	4.9	4.1	4.2	13.4	16.1
Social Security Contributions (Pensions)	2.1	2.1	0.1	0.1	10.2	10.3
Other	1.9	2.8	4.0	4.1	3.3	5.8

6 Findings

This paper simulates four policy scenarios. Each keeps the current debt-to-GDP ratio fixed through time. The first, denoted baseline, assumes current U.S. tax policy is maintained indefinitely. The second permanently eliminates all U.S. federal and state corporate income taxation while raising income and consumption taxes to make up for lost revenue. We consider this elimination policy not because it is likely to arise, but to provide a point of reference for our remaining two policy simulations – adoption of BCFT reform with no fiscal response by foreign regions and adoption in the context of an equal-sized percentage cut by foreign regions in their METRs. We label this fourth scenario 'foreign tax matching.' The House tax plan and the foreign tax-matching simulations fix the model's U.S. consumption tax and wage subsidy rates as discussed below and adjust the income tax each year to balance the budget. We run all simulations starting in 2014, the latest year for which we have initial conditions.

6.1 Baseline Findings

Tables 11 and 12 present key information about the baseline transition path. The Appendix contains detailed results for this and our three policy simulations. Our striking, if not unexpected finding is the decline through time in the importance of the U.S. economy. As table 11 makes clear, the U.S. accounts for 17 percent of world GDP in 2014, but only 5 percent in 2100. To put this projected decline in U.S. world economic dominance in perspective, the U.S. share of world output in 2100 will roughly equal the current Middle East and North African share. In short, the U.S. is predicted to become a small economic player on the global stage. This reflects both demographics and catch-up growth. As table 12 shows, the big end-of-century economic powerhouses will be China, India, MENA (the Middle East and North Africa), and SSA (Sub Saharan Africa). The inclusion of the latter two regions may be surprising. But by the end of this Century, Sub Saharan Africa's GDP will, according to our model, exceed the combined GDPs of China and India. MENA and SSA are both experiencing tremendous population growth. Indeed, SSA's population is projected to more than quadruple by 2100.

Table 11: U.S. Shares of World GDP, Assets, Capital and Population

Year	Baseline Policy (in Percentage) Share of Global GDP	Share of Global Assets	Share of Global Capital	Share of World Pop.	Corporate Tax Elimination (in Percentage) Share of Global GDP	Share of Global Assets	Share of Global Capital	Share of World Pop.	BCFT Reform (in Percentage) Share of Global GDP	Share of Global Assets	Share of Global Capital	Share of World Pop.	Foreign Tax Cut (in Percentage) Share of Global GDP	Share of Global Assets	Share of Global Capital	Share of World Pop.
2014	16.878	32.000	16.609	4.451	18.025	32.000	20.661	4.451	18.211	32.000	19.581	4.451	16.878	32.000	16.609	4.451
2020	16.729	30.000	16.395	4.431	17.959	31.000	20.840	4.431	17.929	32.000	19.592	4.431	17.674	31.000	18.816	4.431
2040	10.558	23.000	10.002	4.301	11.652	23.000	13.927	4.301	11.237	27.000	12.495	4.301	11.072	26.000	12.420	4.301
2060	6.352	15.000	5.961	4.093	6.987	15.000	8.327	4.093	6.518	20.000	7.157	4.093	6.423	20.000	7.252	4.093
2080	5.009	8.000	4.740	4.193	5.466	9.000	6.483	4.193	4.939	13.000	5.397	4.193	4.897	13.000	5.523	4.193
2100	4.980	4.000	4.726	4.172	5.446	5.000	6.434	4.172	4.925	9.000	5.369	4.172	4.930	9.000	5.547	4.172

Table 12: Baseline GDP and Percentage Change from Baseline Due to Reforms

Year	USA Baseline Policy	USA Corp. Tax Elimination	USA BCFT Reform	USA Foreign Tax Cut	WEU Baseline Policy	WEU Corp. Tax Elimination	WEU BCFT Reform	WEU Foreign Tax Cut	JKSH Baseline Policy	JKSH Corp. Tax Elimination	JKSH BCFT Reform	JKSH Foreign Tax Cut	CHI Baseline Policy	CHI Corp. Tax Elimination	CHI BCFT Reform	CHI Foreign Tax Cut	IND Baseline Policy	IND Corp. Tax Elimination	IND BCFT Reform	IND Foreign Tax Cut	RUS Baseline Policy	RUS Corp. Tax Elimination	RUS BCFT Reform	RUS Foreign Tax Cut
		Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline		
2014	1.00	6.80	7.90	3.80	0.93	-1.71	-1.18	-1.07	0.41	-1.96	-0.98	0.49	1.05	-1.90	-1.23	-0.85	0.43	-2.11	-1.64	0.70	0.22	-1.36	-1.36	0.00
2020	1.12	7.35	7.17	3.68	0.98	-1.33	-0.20	0.61	0.40	-1.49	0.00	2.23	1.16	-1.38	-0.26	1.04	0.50	-1.59	-0.79	2.58	0.22	-0.89	-0.45	1.34
2040	1.27	10.36	6.44	2.75	1.45	-0.48	1.25	3.60	0.35	-0.56	1.98	5.37	2.15	-0.42	1.30	4.47	1.32	-0.53	0.68	6.30	0.29	-0.35	0.70	4.20
2060	1.53	9.99	2.61	-1.24	2.56	0.08	1.84	4.38	0.43	-0.23	2.55	5.09	3.34	0.15	2.42	5.08	3.50	-0.06	0.83	7.02	0.49	0.00	1.01	5.48
2080	2.02	9.13	-1.39	-4.76	3.41	0.18	2.26	4.34	0.54	-0.19	2.23	4.46	3.82	0.10	2.46	4.27	6.92	0.00	0.65	6.57	0.76	0.13	0.79	5.51
2100	2.91	9.36	-1.10	-3.51	3.53	0.09	2.44	3.91	0.65	-0.15	2.01	4.17	5.26	-0.06	1.69	3.69	9.54	-0.05	0.52	6.23	0.96	0.21	0.83	5.84

Year	CAN Baseline Policy	CAN Corp. Tax Elimination	CAN BCFT Reform	CAN Foreign Tax Cut	EEU Baseline Policy	EEU Corp. Tax Elimination	EEU BCFT Reform	EEU Foreign Tax Cut	SAP Baseline Policy	SAP Corp. Tax Elimination	SAP BCFT Reform	SAP Foreign Tax Cut	BRA Baseline Policy	BRA Corp. Tax Elimination	BRA BCFT Reform	BRA Foreign Tax Cut	MEX Baseline Policy	MEX Corp. Tax Elimination	MEX BCFT Reform	MEX Foreign Tax Cut	SAF Baseline Policy	SAF Corp. Tax Elimination	SAF House Reform	SAF Foreign Tax Cut
		Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline		
2014	0.17	-1.74	-0.58	-1.16	0.04	-2.38	-2.38	-2.38	0.36	-1.97	-1.40	-0.84	0.19	-1.61	-1.61	4.84	0.13	-1.53	-1.53	-1.53	0.05	-2.00	-2.00	-2.00
2020	0.19	-1.05	0.00	0.52	0.05	-2.17	-2.17	-2.17	0.48	-1.26	-0.63	0.84	0.22	-1.38	-0.46	6.42	0.16	-1.23	-0.61	0.00	0.06	0.00	0.00	0.00
2040	0.22	-0.46	1.84	3.69	0.10	-1.05	0.00	2.11	1.57	-0.45	0.70	4.08	0.44	-0.45	0.68	10.68	0.34	-0.59	0.59	2.37	0.09	0.00	1.09	2.17
2060	0.27	0.00	2.19	4.38	0.17	0.00	1.18	3.55	3.39	-0.06	1.00	4.66	1.00	0.10	1.00	11.23	0.67	-0.15	0.90	3.01	0.13	-0.78	0.78	2.33
2080	0.40	-0.25	1.51	4.02	0.22	0.00	1.39	3.70	4.29	-0.09	0.84	4.06	1.61	0.06	1.05	10.35	0.95	-0.11	0.95	2.63	0.19	0.00	1.06	2.66
2100	0.63	0.00	1.42	4.42	0.36	0.00	1.12	3.64	4.70	-0.15	0.55	3.58	1.69	-0.06	0.83	10.21	1.05	-0.29	0.67	2.20	0.33	0.00	0.61	3.05

Year	MENA Baseline Policy	MENA Corp. Tax Elimination	MENA BCFT Reform	MENA Foreign Tax Cut	SLA Baseline Policy	SLA Corp. Tax Elimination	SLA BCFT Reform	SLA Foreign Tax Cut	SSA Baseline Policy	SSA Corp. Tax Elimination	SSA BCFT Reform	SSA Foreign Tax Cut	SOV Baseline Policy	SOV Corp. Tax Elimination	SOV BCFT Reform	SOV Foreign Tax Cut	GBR Baseline Policy	GBR Corp. Tax Elimination	GBR BCFT Reform	GBR Foreign Tax Cut
		Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline				Scenario % of Baseline		
2014	0.38	-1.33	-1.06	-1.59	0.23	-1.78	-1.78	-0.44	0.12	-1.61	-1.61	0.00	0.05	-1.96	-1.96	-1.96	0.17	-1.19	-0.60	0.00
2020	0.46	-1.08	-0.43	-0.22	0.26	-1.15	-0.38	1.54	0.18	-1.69	-0.56	1.13	0.05	0.00	0.00	0.00	0.17	-1.17	0.00	1.17
2040	1.03	-0.49	0.68	2.15	0.44	-0.45	0.68	4.29	0.75	-0.54	1.07	5.22	0.10	-1.02	1.02	2.04	0.18	-0.55	1.10	3.85
2060	2.43	0.00	0.99	3.34	0.88	-0.11	0.79	4.77	2.80	0.00	1.22	5.97	0.23	0.00	0.86	3.43	0.29	0.00	1.37	5.15
2080	4.72	0.11	0.89	3.45	1.58	-0.06	0.69	4.49	7.85	0.03	1.01	5.44	0.49	0.00	0.82	3.50	0.48	0.00	1.04	5.39
2100	7.45	0.09	0.73	3.45	2.19	-0.09	0.59	4.25	15.88	-0.02	0.81	4.87	0.66	0.00	0.76	3.35	0.58	0.00	1.04	5.53

The MENA and SSA regions, have, in the main, yet to take off economically. But based on demographic projections and the potential for catch-up productivity growth, they could join China and India as the globe's greatest economic powerhouses, accounting, collectively, for 84 percent of total global GDP. The potential economic expansion of MENA and SSA is interesting for understanding global economic development, but it's not critical to assessing the U.S. economic impact of the House tax plan. We have run our model under the extreme assumption of no catch-up growth in either region. Doing so makes little difference to the proportional impact of our U.S. tax-reform results.

Another important baseline finding concerns U.S. GDP growth. It's predicted to be quite slow – averaging just 1.10 percent through the end of the Century. There are two reasons. First, as the labor forces of non-U.S. regions become larger and more productive, these regions bid capital away from the U.S. Second, global saving rates fall over time as regional saving preferences change, current developed regions grow older (which reduces their saving), and high-saving regions become smaller players in the global economy.

A third key U.S. finding from our baseline simulation involves far higher future U.S. taxes. This reflects the need to finance Social Security and health care benefits for an aging population as well as the projected decline, over time, in the growth rate of the workforce.[25] The baseline simulation's 2014 U.S. average income, pension, and consumption tax rates are 13.67 percent, 5.45 percent[26] and 18.13 percent, respectively. The corresponding 2100 rates are 19.10, 11.64, and 25.57. In other words, through the course of this Century, the average income tax rate rises by 39.7 percent, the pension tax rate rises by 210 percent, and the consumption tax rate rises by 41 percent. These are massive tax increases. They reinforce repeated warnings by the Congressional Budget Office and other agencies as well as economists that current U.S. tax policy is unsustainable.

6.2 Eliminating All U.S. Corporate Taxation

Consider, first, immediate elimination of all (federal and state) corporate income taxes. The impacts of this policy on U.S. macro variables and factor prices are reported in tables 13, 14, 15, and 16, as well as figure 2. The first column in each table shows the baseline path of the U.S. variable under consideration. The other columns show percentage changes from the baseline. Eliminating U.S. corporate income taxation in its entirety produces pronounced and sustained increases in GDP. The initial increase is roughly 7 percent. This rises above 9 percent by 2035. The chief reason for the model's remarkably higher path of GDP is the increase in the U.S. capital stock, which is shown in table 14. We calculate a very large– roughly 25 percent – increase in capital demand. Since our model has no adjustment costs, this adjustment occurs immediately.[27] By mid-Century, capital is some 40 percent higher than would otherwise be the case.

[25] Recall our assumption that births stabilize starting in 2064.

[26] Also recall that pensions reference only retirement benefits.

[27] Adding adjustments costs to our model would slow down by a few years, but not fundamentally alter this large capital inflow. Including these costs would, however, represent a major additional computational challenge as the model would need to jointly solve for 17 region-specific paths of q – the ratio of the market price to the replacement cost of capital – in addition to resolving all other endogenous variables.

This capital accumulation does not reflect increased saving by U.S. agents. On the contrary, it arises from capital inflows from abroad. Indeed, in the short run, the policy reduces capital stocks in other regions by as much as 6 percent. Over time, the reductions are much smaller. Yet for the U.S., they add up. Table 12 and figure shows that eliminating U.S. corporate income taxation, whether in full or in part, based on the House plan, entails short-term losses in GDP for foreign regions. These regions experience medium- and long-term increases in output due to workers supplying more labor to make up for their lower real wages.[28]

Table 15 shows that totally eliminating U.S. corporate taxation reduces U.S. labor supply by 2 to 3 percent among both low-skilled and high-skilled workers. Table 16 shows very large increases in real wages both for low- and high-skilled workers, ranging as high as 13.9 percent. In contrast, table 17, which presents levels of (not percentage changes in) world interest rates, indicates much smaller changes compared to the baseline. The changes are, however, positive. This is what one would expect since the U.S. holds, at least initially, a major share – 16.7 percent to be precise – of the world's capital stock. Notwithstanding the major expansion of the economy, eliminating corporate taxation does not pay for itself. This can be seen in table 18. Both the 2014 proportional consumption and average income tax rates rise, albeit modestly, to balance the budget.

Table 19 and 3 presents U.S. welfare gains from this tax reform. These are measured as the compensating percentage increase in each cohort's post-2014 lifetime consumption and leisure needed to achieve the level of remaining or full lifetime utility generated by the reform in question. Eliminating all corporate income taxation is a win-win for U.S. residents. All U.S. agents are better off. In other words, the policy represents a Pareto improvement with those born in the future benefiting relatively more than earlier cohorts and with the unskilled experiencing a higher welfare gain than the skilled.[29] Take, as an example, low- and high-skilled workers born in 2010. Their respective welfare gains are 4.0 percent and 2.5 percent. The reform has a slightly negative impact on world welfare as a whole excluding the US 4. Across the world, US corporate tax elimination reduces welfare by 0 to 2% depending on the region and birth cohort (region, birth-cohort and skill-group specific welfare under each scenario are reported in figures 9 through 16).

6.3 Simulating BCFT Reform

Next consider a BCFT reform modeled on the Better Way tax plan. This reform eliminates the federal METR, reducing the total U.S. METR from 34.6 percent to 16.1 percent. In implementing the reform, we also reduce corporate tax rebates by 80 percent. This reflects our assumption that federal corporate tax loopholes are more important than state corporate tax loopholes.

In simulating the House tax plan, we also implement a consumption tax and a wage subsidy. We do so to account for the plan's VAT plus wage subsidy business tax structure. The consumption tax

[28] As previously indicated, in our model income effects dominate substitution effects in determining household labor-supply responses to changes in real wage rates.

[29] Generations born after 2100 also experience welfare gains.

Table 13: U.S. Baseline GDP and Percentage Changes above Baseline from Reforms

Years	Baseline Policy	Reform Scenarios: Corp. Tax Elimination	BCFT Reform	Foreign Tax Cuts
2014	1.00	6.80	7.90	3.80
2020	1.12	7.35	7.17	3.68
2025	1.19	7.91	6.65	3.45
2030	1.22	8.66	6.70	3.43
2035	1.24	9.49	6.67	3.30
2040	1.27	10.36	6.44	2.75
2045	1.32	10.76	5.76	1.82
2050	1.38	10.69	4.62	0.58
2055	1.46	10.49	3.56	-0.41
2060	1.53	9.99	2.61	-1.24
2080	2.02	9.13	-1.39	-4.76
2100	2.91	9.36	-1.10	-3.51

Table 14: U.S. Baseline Capital Stock and Percentage Changes Above Baseline From Reforms

Years	Baseline Policy	Reform Scenarios: Corp. Tax Elimination	BCFT Reform	Foreign Tax Cuts
2014	1.00	24.40	17.90	4.80
2020	1.08	27.11	19.50	8.64
2025	1.09	29.69	20.68	10.85
2030	1.05	32.70	22.31	12.87
2035	0.99	35.95	23.87	14.50
2040	0.94	39.24	24.92	15.27
2045	0.94	40.89	24.58	15.04
2050	0.99	41.28	23.33	14.20
2055	1.06	40.78	21.67	12.96
2060	1.14	39.70	20.07	11.97
2080	1.62	36.76	13.85	6.83
2100	2.44	36.13	13.60	7.87

Table 15: U.S. Baseline Labor Supply and Percentage Changes Above Baseline From Reforms

Year	Baseline Policy		Elimination of Corporate Tax		House Tax Plan		Foreign Tax Match	
	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled
2014	1.00	1.00	-0.80	-2.30	3.20	3.10	3.71	3.51
2020	1.13	1.16	-1.15	-2.58	1.51	0.69	2.24	1.30
2025	1.23	1.29	-1.63	-2.78	0.16	-1.00	1.07	-0.47
2030	1.30	1.40	-1.92	-2.85	-0.38	-2.14	0.63	-1.53
2035	1.36	1.50	-2.13	-2.86	-0.96	-3.26	0.08	-2.66
2040	1.44	1.62	-2.16	-2.71	-1.53	-4.44	-0.65	-3.81
2060	1.68	2.04	-3.28	-2.84	-4.95	-9.11	-6.83	-9.97
2080	2.13	2.62	-3.58	-2.86	-8.24	-12.32	-10.67	-13.45
2100	3.03	3.76	-2.84	-2.66	-7.43	-11.60	-8.44	-12.03

Table 16: U.S. Baseline Wages and Percentage Changes Above Baseline From Reforms

	Baseline Policy		Elimination of Corporate Tax		House Tax Plan		Foreign Tax Match	
	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled
2014	1.00	2.46	7.8	9.5	4.8	4.9	0.6	0.3
2020	0.99	2.37	8.9	10.3	5.7	6.5	2.4	2.9
2025	0.97	2.27	9.8	11.1	6.4	7.7	3.5	4.5
2030	0.95	2.15	10.9	12.0	7.0	8.9	4.3	5.9
2035	0.92	2.05	12.0	12.8	7.5	10.0	5.0	7.3
2040	0.89	1.94	13.0	13.6	7.9	11.1	5.5	8.4
2060	0.92	1.85	13.9	13.3	7.3	12.2	5.8	10.2
2080	0.96	1.91	13.2	12.4	6.6	11.6	5.2	9.9
2100	0.98	1.94	12.6	12.4	6.2	11.2	4.7	9.7

Table 17: World Interest Rate

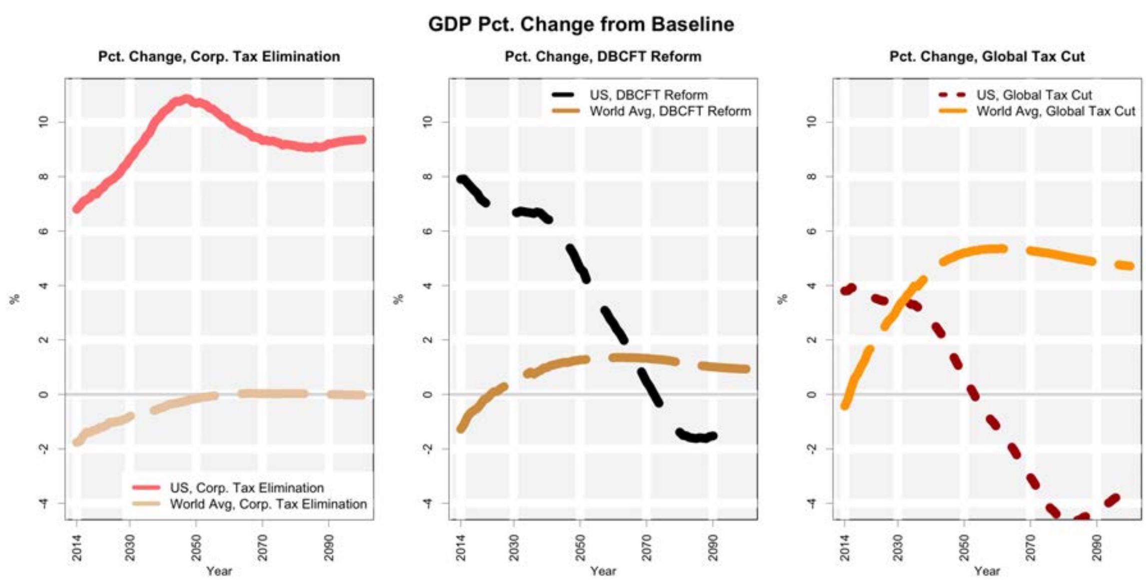
Year	Baseline Policy	Elimination of Corp. Tax	BCFT Plan	Foreign Tax Cut
2014	4.67	5.11	4.98	5.89
2020	5.04	5.37	5.16	5.87
2025	5.59	5.87	5.60	6.25
2030	6.31	6.56	6.24	6.87
2035	7.14	7.34	6.98	7.59
2040	8.06	8.24	7.85	8.47
2060	8.05	8.11	7.83	8.25
2080	7.11	7.17	6.95	7.31
2100	6.72	6.78	6.62	6.95

Table 18: Consumption and Income Tax Rates

Year	Baseline Policy		Elimination of Corporate Tax		BCFT Reform		Foreign Tax Match	
	Consumption	Income	Consumption	Income	Consumption	Income	Consumption	Income
2014	18.1	13.7	20.4	14.5	33.1	11.5	33.1	11.0
2015	18.4	13.8	20.7	14.7	33.1	11.9	33.1	11.4
2020	19.3	14.7	21.7	15.6	33.1	12.9	33.1	12.5
2025	19.7	15.1	22.1	16.1	33.1	13.0	33.1	12.5
2030	19.4	15.1	21.9	16.3	33.1	12.1	33.1	11.5
2035	19.3	15.3	21.9	16.5	33.1	11.4	33.1	10.6
2040	18.9	14.6	21.7	15.9	33.1	9.7	33.1	8.8
2060	18.5	14.6	21.0	15.9	33.1	6.2	33.1	5.0
2080	21.5	17.6	23.8	18.8	33.1	8.1	33.1	6.7
2100	25.6	19.1	28.5	20.5	33.1	13.5	33.1	12.5

Additional wage subsidy of 11.9 percent under the House tax plan and foreign tax-matching scenarios.

Figure 2: U.S. and World (Excluding U.S.) Average GDP Percent Change above Baseline from Reforms



World Average GDP changes are weighted by GDP. The U.S. is excluded from World GDP change estimates.

Figure 3: U.S. Percentage Welfare Increase from Reforms by Birth Cohort

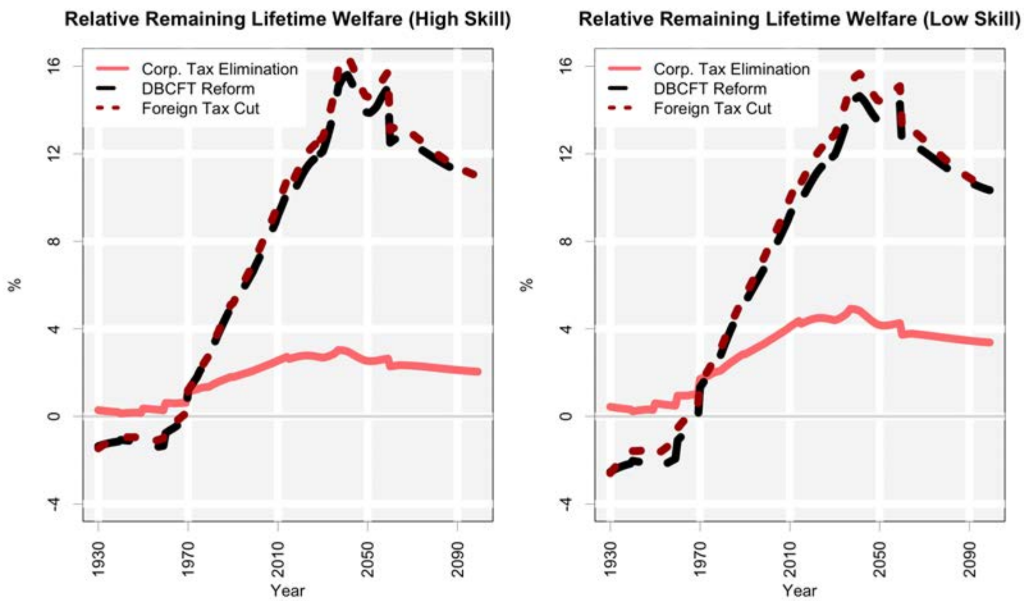
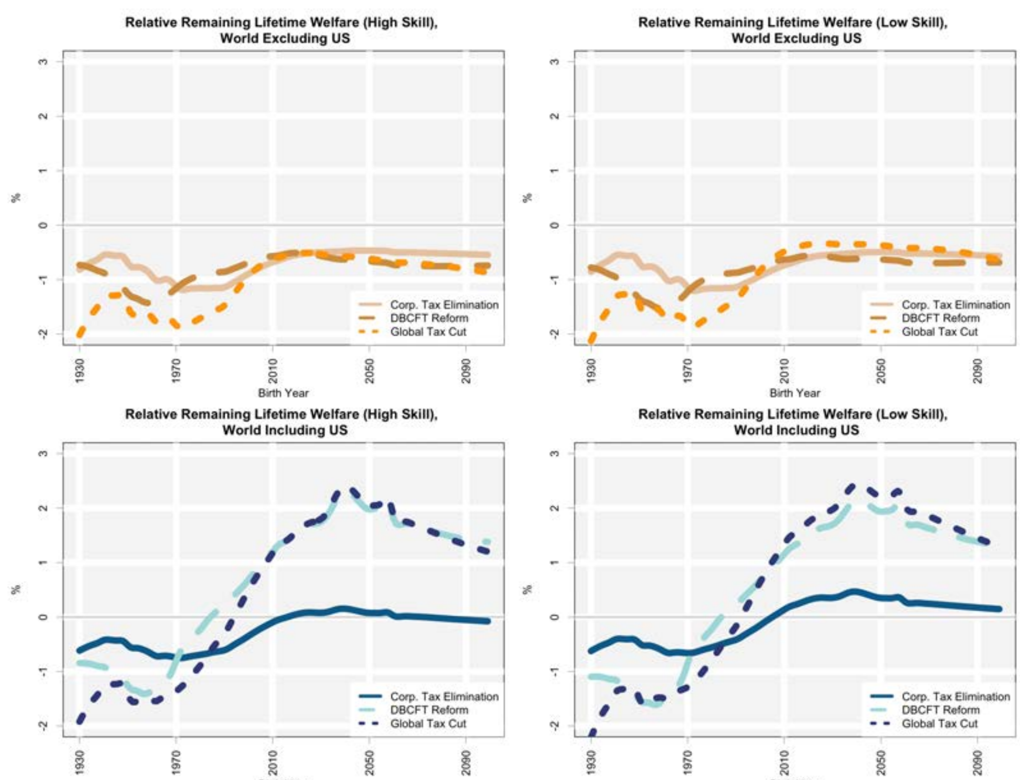


Figure 4: Welfare Increase from Reforms by Birth Cohort for the World Including or Excluding the US



Welfare changes for a skill group are GDP weighted averages.

Table 19: U.S. Welfare Increase from Reforms

Birth Year	Elimination of Corporate Tax		BCFT Plan		Foreign Tax Match	
	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled	Low-Skilled	High-Skilled
1935	0.4	0.2	-2.3	-1.2	-2.0	-1.2
1940	0.2	0.1	-2.0	-1.1	-1.6	-0.9
1945	0.3	0.2	-2.1	-1.1	-1.6	-1.0
1950	0.6	0.4	-2.3	-1.3	-1.7	-1.2
1955	0.5	0.3	-2.2	-1.4	-1.4	-1.1
1960	0.9	0.6	-1.1	-0.8	-0.5	-0.6
1965	1.0	0.6	-0.6	-0.4	0.0	-0.2
1970	1.7	1.1	1.3	1.2	1.5	1.2
1975	1.9	1.3	2.2	2.0	2.4	2.0
1980	2.2	1.4	3.0	2.9	3.3	3.0
1985	2.6	1.6	4.3	4.1	4.5	4.2
1990	2.8	1.8	5.2	5.0	5.5	5.2
2000	3.4	2.1	7.1	6.9	7.6	7.2
2005	3.7	2.3	8.1	8.0	8.7	8.4
2010	4.1	2.6	9.2	9.2	10.0	9.7
2015	4.2	2.6	9.9	9.8	10.7	10.4
2020	4.4	2.8	10.8	10.9	11.6	11.5
2025	4.5	2.8	11.5	11.6	12.4	12.3
2030	4.4	2.7	12.0	12.1	12.9	12.8
2035	4.7	2.9	13.4	13.9	14.4	14.7
2040	4.9	3.0	14.6	15.6	15.6	16.4
2045	4.5	2.7	14.1	14.7	15.1	15.5
2050	4.2	2.5	13.5	13.9	14.4	14.6
2055	4.2	2.6	13.8	14.3	14.7	15.1
2060	3.7	2.3	12.3	12.5	13.1	13.1
2070	3.7	2.3	12.1	12.5	12.6	12.9
2080	3.6	2.2	11.3	11.8	11.7	12.1
2100	3.4	2.0	10.3	10.9	10.4	11.0

Welfare for a skill- and country-specific cohort born in year t is measured as a compensating differential. The compensating differential measures the percentage increase in annual consumption and leisure in the baseline transition needed to achieve lifetime utility under the reform.

rate is set 15 percentage points above its baseline 2014 level.[30] Since the baseline 2014 consumption tax rate is 18.1 percent, raising it by 15 percentage points produces a 33.1 percent consumption tax. We hold this tax rate fixed through time in the simulation, letting the income tax rate adjust to balance the budget. We also include a permanent wage subsidy of 11.9 percent. The combination of the 15 percent consumption tax and the 11.9 percent wage subsidy produces 2014 net revenues equal to 2014 baseline corporate tax revenues. Choosing the wage subsidy rate in this manner is consistent with our assumption that the business portion of the House tax plan is revenue neutral.

As with the complete elimination of corporate taxation, the House plan produces a major and rapid increase in GDP – almost 8 percent by the end of a decade (see table 13). By mid-century the increase is 5 percent relative to the baseline value. However, in the long run, GDP is actually lower than along its baseline path. The reason is the reduction in labor supply by both skill groups induced by the policy's higher real wages.

The House plan raises the U.S. capital stock in the first year of the reform by 17.9 percent. And the increase is even larger through at least 2060 (see table 14). The peak increase is 24.92 percent in 2014. The policy induces a short-run rise in labor supply (see table 15), but overtime the labor supply drops significantly. Indeed, by 2100, the unskilled and skilled are supplying 7.43 percent and

[30]The House tax plan calls for a 20 percent BCFT rate, but roughly one quarter of U.S. consumption, primarily imputed rent on owner-occupied housing, would be exempt from the tax.

11.60 percent less labor, respectively. The reason is the decline over time in income tax rates. This is associated with a major increase in consumption tax revenues driven by the aging of the U.S. population.[31] While moving to BCFT is revenue neutral in the short term, over the next few decades it increases revenue due to this expansion of the consumption tax base.

As figure 3 and table 19 shows, the House tax plan produces far larger welfare gains for current young and future generations than the corporate tax elimination simulation. The reason is that older initial generations experience welfare losses as a result of the reform's shift toward consumption taxation and away from labor-income taxation. The generation born in 1935, who are 83 in 2014, experience welfare losses of 2.3 percent and 1.2 percent in the case of low- and high-skilled workers. Their counterparts born in 2100 experience welfare gains of 10.3 percent and 10.9 percent. Foreigners are largely indifferent between the two US policies (figure 4), but because BCFT reform is so much better for the US, the world as a whole is much better off under the US BCFT reform.

6.4 Simulating "Foreign Tax Matching"

Our final policy simulation considers the consequences if foreign regions proportionally match the House plan's corporate tax cuts. We assume other regions finance these cuts by increasing income and consumption/VAT taxes to maintain the same share of revenue generated by each.

Foreign-tax matching entails a significantly smaller increase to U.S. GDP and its capital stock. For example, in 2014, these variables are only 3.80 percent and 4.80 percent above their baseline values. This far less robust impact of the House reform holds for all future years as well. Take 2080. U.S. GDP is actually 4.76 percent lower than the corresponding baseline value. On the other hand, foreign countries suffer less capital flight under this scenario. Brazil, which has an especially high corporate tax rate, sees an increase in GDP above baseline of over 10 percent in the second half of the Century.

Surprisingly, the welfare changes from the House tax plan in the context of foreign tax-matching are, according to table 19 and figure 3, quite similar to those arising without foreign tax matching. The reason is that the policy's major shift toward consumption taxation continues to produce a significant redistribution away from initial older generations, who experience higher lifetime remaining tax burdens, to young and future generations. Although U.S. wage rates rise by less due to the tax matching (see table 16), the world interest rate is higher thanks to the reduction in foreign-region METRs. This benefits U.S. households whether they invest at home or abroad. Americans own a disproportionate share of world assets through the end of the Century, meaning they benefit from lower global corporate taxes. Higher asset incomes, especially as a percentage of GDP, also allow for further reductions in income tax rates. GDP percentage changes above/below baseline by region are summarized in figures 5, 6, 7, and 8.

For the rest of the world, the story is analogous but reversed. As figure 4 displays, a global race to the bottom in corporate tax rates in response to a US BCFT reform would not much impact

[31] Note that the propensity to consume rises with age in this and all other life-cycle models.

average welfare in the rest of the world, particularly in the long run. This is because while the rest of the world benefits from a higher capital stock and wage, this is offset by the loss of corporate tax income paid by disproportionately American asset holders. To the extent that a race to the bottom does impact average lifetime welfare for foreign countries, it is to slightly hurt older generations, who must pay higher consumption taxes but do not benefit from higher wages.

That being said, there is dramatic heterogeneity across countries in terms of who benefits from the global corporate tax cut. The welfare winners from a race to the bottom are rich countries with high initial corporate tax rates: the US and JKSH (a region constituting Japan, South Korea, Singapore and Hong Kong) especially. Despite being poorer initially, Brazil also benefits due to its very high corporate tax rate. Regions that suffer most from this event are poorer and already have low corporate tax rates. Eastern Europe, Russia, South Africa, and the Middle East and North Africa are examples (figures 9 through 16).

7 Conclusion

This paper uses a 17-region computable general equilibrium model to simulate the replacement of the U.S. federal corporate income tax with a business cash flow tax. The model is closely calibrated to U.N. reported demographics, both current and projected, and to IMF measures of fiscal aggregates. The model's baseline transition path shows a global economy that slowly but surely catches up to the U.S.. This catch-up growth coupled with demographic changes produces a very different regional distribution of world output at the end of the century than now prevails.

The specific BCFT reform considered is the House Republican "Better Way" tax plan. This plan is very similar to that proposed by tax reform commissions as well as many academic economists and tax specialists. It was the foundation of the Tax Cuts and Jobs Act of 2017. In our simulations, the House tax plan raises real wages by roughly 6 percent in the short run and over 8 percent thereafter. The reason is the induced inflow of capital. The model produces a roughly 18 to 25 percent higher level of U.S. domestic capital for the next half century. This is associated with a 2 to 8 percent higher level of GDP over the same period.

The gains to the U.S. from moving, on its own, to a BCFT come largely at the expense of other regions, whose capital stocks, GDPs, and real wages fall relative to the no-reform baseline path. As we show, these economic impacts are considerably smaller if other regions implement the same percentage reduction in their METRs in response to the U.S. reform. But even with foreign tax-matching, the simulations suggest a major improvement in the U.S. economy due to the fact that the absolute U.S. METR falls by a larger amount than occurs in other regions.

We also simulate the elimination not just of the federal component of the U.S. METR, but the state component as well. This produces far larger increases in GDP, capital stocks, and wage rates, particularly for low-skilled workers. The difference between this policy's outcomes and those arising from the House tax plan revolve around the inclusion, in the House tax plan, of a VAT plus a wage subsidy. This adds an extra consumption tax to the model, which is levied primarily on owners of wealth. Its revenues, particularly toward the end of the century, permit major reductions in the personal income tax rate. This, in turn, differentially benefits high-skilled workers, who take more leisure than the unskilled and collectively raise their relative wages.

For the rest of the world, either US corporate tax reform has small negative effects on average, lowering welfare by less than one percent for most cohorts, without much variation among countries. If the world were to respond, in a "race to the bottom" with a matching global tax cut, this would have a relatively small impact on both US and global average welfare. This is because, in effect, the average increase in non-US wages created by the global corporate tax cut is roughly offset by the reduction in revenues from US citizens investing abroad. However, there is a large spread across regions in the global impact of such a global tax cut. Rich countries with high initial corporate tax rates do very well (Japan, South Korea, Hong Kong and Singapore for example) while poorer countries with low initial corporate tax rates do poorly (especially Eastern Europe).

Like all models, ours abstracts from some realities. First, to limit computational complexity, the model features no capital adjustment costs. The large initial increase in U.S. capital stocks that we project immediately following the reform would likely take several years to manifest were such adjustment costs taken into account.

Our model also takes a very simplified approach to considering inequality. We model just two income groups – low- and high-skilled workers. This said, our results suggest that BCFT reform would have little impact on wage inequality with a more realistic number of skill groups. A third limitation is the assumption that capital is a complement to workers of both types. A growing literature on skill-biased technological change suggests that certain forms of capital can substitute for routine labor. Such an effect might materially alter our findings on the impact of BCFT on intragenerational equality.

Finally, our model also features only one good. We conjecture that adding additional traded as well as non-traded goods would have little impact on our findings provided each country can produce each of the traded goods or that the traded goods are close substitutes. But this remains to be demonstrated.

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Appendix

Appendix Table 1: Baseline Macro Aggregates and Tax Rates.

	Baseline Simulation Results (capital and labor supplies are relative to 2014 U.S. levels									
				Labor Supply						
	Year	GDP	Capital Stock	Low Skilled	High Skilled	Corporate Tax	Income Tax	Pension Tax	Consumption Tax
USA	2014	1.00	1.00	1.00	1.00	34.60	13.67	5.45	18.13
	2020	1.12	1.08	1.13	1.16	34.60	14.67	6.70	19.33
	2025	1.19	1.09	1.23	1.29	34.60	15.05	7.94	19.68
	2030	1.22	1.05	1.30	1.40	34.60	15.12	9.47	19.40
	2035	1.24	0.99	1.36	1.50	34.60	15.28	10.57	19.33
	2040	1.27	0.94	1.44	1.62	34.60	14.57	11.54	18.92
	2060	1.53	1.14	1.68	2.04	34.60	14.58	14.44	18.52
	2080	2.02	1.62	2.13	2.62	34.60	17.59	12.29	21.47
	2100	2.91	2.44	3.03	3.76	34.60	19.10	11.64	25.57
WEU	2014	0.93	1.00	0.86	1.01	25.40	16.15	10.95	32.64
	2020	0.98	1.01	0.91	1.09	25.40	16.64	12.96	32.19
	2040	1.45	1.16	1.53	1.83	25.40	17.02	11.24	35.84
	2060	2.56	2.05	2.75	3.12	25.40	15.86	6.50	35.85
	2080	3.41	2.92	3.48	4.04	25.40	13.72	9.36	28.45
	2100	3.53	3.10	3.40	4.31	25.40	13.37	15.18	22.91
JKSH	2014	0.41	0.41	0.35	0.53	35.50	12.70	2.08	18.01
	2020	0.40	0.39	0.35	0.53	35.50	13.12	2.71	16.57
	2040	0.35	0.25	0.35	0.51	35.50	12.37	5.07	12.33
	2060	0.43	0.29	0.42	0.58	35.50	10.14	3.90	9.12
	2080	0.54	0.39	0.49	0.68	35.50	8.41	2.75	8.19
	2100	0.65	0.48	0.58	0.80	35.50	8.83	3.08	8.14
CHI	2014	1.05	1.13	0.96	1.17	26.00	1.76	1.45	47.48
	2020	1.16	1.20	1.08	1.30	26.00	1.73	1.94	44.13
	2040	2.15	1.75	2.38	2.67	26.00	1.40	2.38	33.07
	2060	3.34	2.75	3.93	3.88	26.00	1.25	2.00	28.98
	2080	3.82	3.40	4.48	4.07	26.00	1.18	3.61	23.21
	2100	5.26	4.84	6.10	5.50	26.00	1.28	3.73	21.98
IND	2014	0.43	0.43	0.36	0.58	33.99	4.34	1.88	27.06
	2020	0.50	0.49	0.43	0.70	33.99	4.29	2.41	28.65
	2040	1.32	1.00	1.31	2.11	33.99	4.64	1.77	32.61
	2060	3.50	2.66	3.53	5.54	33.99	5.49	0.98	38.87
	2080	6.92	5.66	6.74	10.40	33.99	5.18	1.60	39.19
	2100	9.54	8.08	9.14	14.11	33.99	5.92	2.91	47.76
RUS	2014	0.22	0.20	0.18	0.20	27.90	7.05	7.44	22.51
	2020	0.22	0.20	0.19	0.21	27.90	8.48	10.62	28.64
	2040	0.29	0.20	0.28	0.32	27.90	11.73	13.09	43.61
	2060	0.49	0.37	0.51	0.59	27.90	15.52	7.51	73.47
	2080	0.76	0.64	0.78	0.90	27.90	16.24	8.23	91.62
	2100	0.96	0.86	1.00	1.19	27.90	18.81	11.68	126.94
BRA	2014	0.19	0.17	0.17	0.26	47.30	4.57	5.90	33.23
	2020	0.22	0.19	0.20	0.31	47.30	4.82	7.69	39.42
	2040	0.44	0.29	0.48	0.73	47.30	5.80	7.53	55.08
	2060	1.00	0.65	1.11	1.65	47.30	6.42	4.74	58.76
	2080	1.61	1.15	1.72	2.55	47.30	6.10	9.26	66.80
	2100	1.69	1.25	1.77	2.63	47.30	7.43	19.75	86.91

Appendix Table 1 Continued: Baseline Policy Macro Aggregates and Tax Rates.

Baseline Simulation Results (capital and labor supplies are relative to 2014 U.S. levels										
	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
GBR	2014	0.2	0.2	0.1	0.2	25.0	5.6	7.7	38.7
	2020	0.2	0.2	0.1	0.2	25.0	6.0	9.9	40.7
	2040	0.2	0.1	0.2	0.2	25.0	6.8	12.8	47.9
	2060	0.3	0.2	0.3	0.4	25.0	8.2	7.0	68.8
	2080	0.5	0.4	0.5	0.6	25.0	7.0	5.1	63.8
	2100	0.6	0.5	0.6	0.7	25.0	7.0	6.6	60.8
CAN	2014	0.2	0.2	0.1	0.2	23.9	16.3	1.5	23.7
	2020	0.2	0.2	0.2	0.2	23.9	18.3	2.0	25.5
	2040	0.2	0.2	0.2	0.3	23.9	22.6	4.2	27.2
	2060	0.3	0.2	0.3	0.4	23.9	23.7	4.6	28.7
	2080	0.4	0.3	0.4	0.5	23.9	26.3	3.3	33.7
	2100	0.6	0.6	0.6	0.8	23.9	26.8	2.8	39.2
MENA	2014	0.4	0.3	0.2	0.4	17.5	2.0	0.9	14.9
	2020	0.5	0.4	0.3	0.5	17.5	3.0	1.2	25.5
	2040	1.0	0.8	0.9	1.4	17.5	5.4	1.7	53.0
	2060	2.4	2.0	2.2	3.4	17.5	6.6	1.7	70.3
	2080	4.7	4.3	4.2	6.5	17.5	6.9	2.6	80.7
	2100	7.4	7.1	6.7	10.3	17.5	7.5	3.8	92.6
MEX	2014	0.1	0.1	0.1	0.1	19.7	3.9	2.9	12.9
	2020	0.2	0.2	0.1	0.2	19.7	4.0	3.4	14.7
	2040	0.3	0.3	0.4	0.4	19.7	4.7	4.2	19.2
	2060	0.7	0.6	0.7	0.7	19.7	5.0	4.2	20.1
	2080	1.0	0.9	1.0	1.0	19.7	5.0	7.5	21.1
	2100	1.0	1.0	1.1	1.1	19.7	5.7	12.8	23.8
SAF	2014	0.1	0.1	0.0	0.1	14.3	13.7	4.0	17.2
	2020	0.1	0.1	0.1	0.1	14.3	13.0	5.5	17.7
	2040	0.1	0.1	0.1	0.1	14.3	12.2	13.0	17.2
	2060	0.1	0.1	0.1	0.1	14.3	12.0	17.6	15.8
	2080	0.2	0.2	0.2	0.2	14.3	14.1	17.2	17.6
	2100	0.3	0.3	0.3	0.4	14.3	15.0	15.4	20.0
SAP	2014	0.4	0.4	0.3	0.4	25.3	2.8	0.6	20.1
	2020	0.5	0.5	0.4	0.5	25.3	2.7	0.6	18.6
	2040	1.6	1.3	1.7	1.9	25.3	3.1	0.5	18.4
	2060	3.4	2.8	3.9	4.0	25.3	3.1	0.6	21.4
	2080	4.3	3.8	4.8	4.7	25.3	3.3	1.7	22.5
	2100	4.7	4.3	5.2	5.1	25.3	3.9	2.6	22.5
SLA	2014	0.2	0.2	0.2	0.2	27.5	1.5	3.6	25.3
	2020	0.3	0.3	0.2	0.3	27.5	1.7	4.4	30.9
	2040	0.4	0.3	0.5	0.5	27.5	2.2	4.6	40.5
	2060	0.9	0.7	1.0	1.1	27.5	2.3	4.0	42.1
	2080	1.6	1.4	1.7	1.8	27.5	1.9	4.9	42.3
	2100	2.2	1.9	2.3	2.5	27.5	2.0	7.5	51.0

Appendix Table 1 Continued: Baseline Policy Macro Aggregates and Tax Rates.

Baseline Simulation Results (capital and labor supplies are relative to 2014 U.S. levels)									
	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
SOV	2014	0.1	0.1	0.0	0.1	17.5	7.0	2.1	33.0
	2020	0.1	0.1	0.0	0.1	17.5	8.3	3.1	41.5
	2040	0.1	0.1	0.1	0.1	17.5	9.0	3.5	47.7
	2060	0.2	0.2	0.2	0.3	17.5	8.0	1.1	40.4
	2080	0.5	0.4	0.5	0.5	17.5	6.6	1.2	33.8
	2100	0.7	0.6	0.7	0.7	17.5	7.9	2.6	40.8
SSA	2014	0.1	0.1	0.1	0.1	30.5	3.6	0.1	21.5
	2020	0.2	0.2	0.2	0.2	30.5	3.9	0.1	26.5
	2040	0.7	0.6	0.8	1.0	30.5	4.6	0.1	37.6
	2060	2.8	2.2	3.1	3.6	30.5	4.6	0.1	38.1
	2080	7.8	6.6	8.5	9.5	30.5	4.4	0.1	33.8
	2100	15.9	13.9	17.3	18.3	30.5	4.0	0.2	28.9
EEU	2014	0.0	0.0	0.0	0.0	15.1	7.5	10.3	31.8
	2020	0.0	0.0	0.0	0.0	15.1	8.1	12.9	34.3
	2040	0.1	0.1	0.1	0.1	15.1	8.4	9.4	42.9
	2060	0.2	0.1	0.2	0.2	15.1	8.2	7.0	44.3
	2080	0.2	0.2	0.2	0.2	15.1	10.8	16.3	48.2
	2100	0.4	0.3	0.4	0.4	15.1	12.3	14.9	62.1

Appendix Table 2: Baseline Projected Factor Prices and Marginal Products

Baseline Simulation Results - Marginal Products and Factor Payments							
	Year	Marginal Product of Capital	Global Interest Rate	Wage Rate		Marginal Product of Labor	
				Low Skilled	High Skilled	Low Skilled	High Skilled
USA	2014	14.64	4.67	1.00	2.46	1.00	2.46
	2020	15.20	5.04	0.99	2.37	0.99	2.37
	2025	16.04	5.59	0.97	2.27	0.97	2.27
	2030	17.15	6.31	0.95	2.15	0.95	2.15
	2035	18.40	7.13	0.92	2.05	0.92	2.05
	2040	19.83	8.06	0.89	1.94	0.89	1.94
	2060	19.81	8.05	0.92	1.85	0.92	1.85
	2080	18.37	7.11	0.96	1.91	0.96	1.91
	2100	17.77	6.72	0.98	1.94	0.98	1.94
WEU	2014	13.77	4.67	0.37	0.76	1.10	2.30
	2020	14.26	5.04	0.48	0.99	1.09	2.23
	2040	18.30	8.06	0.77	1.57	0.95	1.95
	2060	18.29	8.05	0.93	2.02	0.93	2.02
	2080	17.03	7.11	1.02	2.20	0.98	2.07
	2100	16.51	6.72	1.07	2.11	1.03	1.99
JKSH	2014	14.75	4.67	0.58	0.94	1.16	1.91
	2020	15.32	5.04	0.71	1.16	1.14	1.87
	2040	19.99	8.06	1.02	1.70	0.98	1.64
	2060	19.98	8.05	0.97	1.69	0.97	1.69
	2080	18.52	7.11	1.06	1.91	1.00	1.78
	2100	17.92	6.72	1.07	1.96	1.01	1.83
CHI	2014	13.82	4.67	0.08	0.12	1.21	1.83
	2020	14.31	5.04	0.13	0.20	1.19	1.79
	2040	18.39	8.06	0.27	0.41	1.02	1.57
	2060	18.38	8.05	0.49	0.77	1.01	1.59
	2080	17.11	7.11	0.74	1.17	1.05	1.67
	2100	16.58	6.72	0.96	1.52	1.07	1.70
IND	2014	14.58	4.67	0.08	0.12	1.21	1.83
	2020	15.14	5.04	0.13	0.20	1.19	1.79
	2040	19.71	8.06	0.27	0.41	1.02	1.57
	2060	19.70	8.05	0.49	0.77	1.01	1.59
	2080	18.27	7.11	0.74	1.17	1.05	1.67
	2100	17.68	6.72	0.96	1.52	1.07	1.70
RUS	2014	13.98	4.67	0.30	0.68	1.06	2.39
	2020	14.49	5.04	0.38	0.84	1.05	2.31
	2040	18.68	8.06	0.58	1.24	0.92	1.98
	2060	18.67	8.05	0.93	1.98	0.93	1.98
	2080	17.36	7.11	1.04	2.21	0.97	2.05
	2100	16.82	6.72	1.06	2.21	0.99	2.06
BRA	2014	16.37	4.67	0.22	0.35	1.11	1.78
	2020	17.07	5.04	0.36	0.57	1.09	1.73
	2040	22.79	8.06	0.71	1.14	0.93	1.50
	2060	22.78	8.05	0.92	1.52	0.92	1.52
	2080	20.99	7.11	1.07	1.79	0.96	1.59
	2100	20.25	6.72	1.10	1.81	0.98	1.62

Appendix Table 2 Continued: Baseline Projected Factor Prices and Marginal Products

Baseline Simulation Results - Marginal Products and Factor Payments							
	Year	Marginal Product of Capital	Global Interest Rate	Wage Rate		Marginal Product of Labor	
				Low Skilled	High Skilled	Low Skilled	High Skilled
GBR	2014	13.73	4.67	0.83	1.43	1.19	2.04
	2020	14.22	5.04	0.84	1.44	1.16	2.01
	2040	18.24	8.06	0.80	1.41	1.01	1.78
	2060	18.23	8.05	0.84	1.51	1.00	1.81
	2080	16.98	7.11	0.98	1.81	1.03	1.91
	2100	16.46	6.72	1.04	2.00	1.03	1.98
CAN	2014	13.64	4.67	0.71	1.24	1.18	2.07
	2020	14.13	5.04	0.82	1.42	1.16	2.03
	2040	18.09	8.06	1.06	1.85	1.02	1.78
	2060	18.08	8.05	1.01	1.80	1.01	1.80
	2080	16.84	7.11	1.09	1.91	1.06	1.85
	2100	16.33	6.72	1.12	1.92	1.08	1.86
MENA	2014	13.17	4.67	0.10	0.15	1.27	1.94
	2020	13.61	5.04	0.15	0.23	1.25	1.90
	2040	17.27	8.06	0.30	0.46	1.10	1.69
	2060	17.26	8.05	0.54	0.84	1.09	1.71
	2080	16.12	7.11	0.79	1.27	1.12	1.79
	2100	15.64	6.72	1.01	1.65	1.14	1.83
MEX	2014	13.32	4.67	0.25	0.55	1.09	2.43
	2020	13.78	5.04	0.38	0.84	1.08	2.38
	2040	17.53	8.06	0.72	1.63	0.93	2.14
	2060	17.53	8.05	0.91	2.22	0.91	2.22
	2080	16.35	7.11	0.95	2.30	0.94	2.34
	2100	15.87	6.72	0.96	2.34	0.95	2.39
SAF	2014	12.95	4.67	0.21	0.45	1.13	2.40
	2020	13.38	5.04	0.25	0.54	1.11	2.36
	2040	16.90	8.06	0.35	0.76	0.97	2.12
	2060	16.89	8.05	0.53	1.20	0.95	2.17
	2080	15.80	7.11	0.71	1.62	0.98	2.27
	2100	15.34	6.72	0.87	2.02	0.99	2.33
SAP	2014	13.76	4.67	0.12	0.24	1.11	2.26
	2020	14.25	5.04	0.28	0.57	1.09	2.24
	2040	18.29	8.06	0.67	1.49	0.92	2.07
	2060	18.28	8.05	0.90	2.15	0.90	2.15
	2080	17.02	7.11	0.96	2.37	0.92	2.28
	2100	16.50	6.72	0.97	2.42	0.93	2.32
SLA	2014	13.95	4.67	0.17	0.37	1.08	2.33
	2020	14.46	5.04	0.21	0.45	1.06	2.27
	2040	18.62	8.06	0.32	0.67	0.93	1.98
	2060	18.61	8.05	0.49	1.09	0.92	2.03
	2080	17.31	7.11	0.69	1.58	0.94	2.15
	2100	16.77	6.72	0.87	2.01	0.95	2.21

Appendix Table 2 Continued: Baseline Projected Factor Prices and Marginal Products

Baseline Simulation Results - Marginal Products and Factor Payments							
	Year	Marginal Product of Capital	Global Interest Rate	Wage Rates		Marginal Product of Labor	
				Low Skilled	High Skilled	Low Skilled	High Skilled
SOV	2014	13.17	4.67	0.12	0.25	1.14	2.33
	2020	13.61	5.04	0.17	0.35	1.12	2.28
	2040	17.27	8.06	0.29	0.60	0.98	2.03
	2060	17.26	8.05	0.49	1.07	0.96	2.10
	2080	16.12	7.11	0.71	1.65	0.97	2.25
	2100	15.64	6.72	0.89	2.10	0.97	2.34
SSA	2014	14.23	4.67	0.05	0.10	1.11	2.16
	2020	14.76	5.04	0.10	0.20	1.09	2.12
	2040	19.10	8.06	0.23	0.46	0.94	1.89
	2060	19.09	8.05	0.44	0.92	0.92	1.93
	2080	17.73	7.11	0.65	1.45	0.94	2.08
	2100	17.17	6.72	0.83	1.95	0.94	2.18
EEU	2014	13.01	4.67	0.09	0.19	1.14	2.34
	2020	13.44	5.04	0.21	0.42	1.12	2.30
	2040	17.00	8.06	0.50	1.05	0.97	2.09
	2060	16.99	8.05	0.95	2.18	0.95	2.18
	2080	15.88	7.11	1.00	2.44	0.95	2.38
	2100	15.42	6.72	1.03	2.41	0.99	2.34

Appendix Table 3: Corporate Tax Elimination Macro Aggregates and Tax Rates.

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %

	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
USA	2014	6.8	24.4	-0.8	-2.3	0.0	14.5	5.5	20.4
	2020	7.4	27.1	-1.2	-2.6	0.0	15.6	6.7	21.7
	2025	7.9	29.7	-1.6	-2.8	0.0	16.1	7.9	22.1
	2030	8.7	32.7	-1.9	-2.8	0.0	16.3	9.3	21.9
	2035	9.5	36.0	-2.1	-2.9	0.0	16.5	10.4	21.9
	2040	10.4	39.2	-2.2	-2.7	0.0	15.9	11.2	21.7
	2060	10.0	39.7	-3.3	-2.8	0.0	15.9	14.2	21.0
	2080	9.1	36.8	-3.6	-2.9	0.0	18.8	12.3	23.8
	2100	9.4	36.1	-2.8	-2.7	0.0	20.5	11.6	28.5
WEU	2014	-1.7	-5.8	0.4	0.5	25.4	16.0	11.0	33.2
	2020	-1.3	-4.2	0.3	0.4	25.4	16.6	12.9	32.7
	2040	-0.5	-1.8	0.2	0.2	25.4	17.1	11.1	36.5
	2060	0.1	-0.4	0.3	0.4	25.4	16.1	6.4	36.8
	2080	0.2	-0.2	0.3	0.5	25.4	13.9	9.3	29.2
	2100	0.1	-0.5	0.2	0.6	25.4	13.5	15.2	23.5
JKSH	2014	-2.0	-6.1	0.6	0.4	35.5	12.5	2.1	18.0
	2020	-1.5	-4.7	0.3	0.6	35.5	12.9	2.7	16.6
	2040	-0.6	-2.0	0.3	0.2	35.5	12.2	5.0	12.4
	2060	-0.2	-0.7	0.0	0.2	35.5	10.1	3.9	9.2
	2080	-0.2	-0.8	0.0	0.0	35.5	8.5	2.7	8.3
	2100	-0.2	-1.0	-0.2	0.0	35.5	8.9	3.1	8.3
CHI	2014	-1.9	-5.9	0.2	0.3	26.0	1.8	1.5	48.2
	2020	-1.4	-4.2	0.3	0.3	26.0	1.7	1.9	45.0
	2040	-0.4	-1.7	0.3	0.4	26.0	1.4	2.4	33.9
	2060	0.1	-0.3	0.3	0.5	26.0	1.3	2.0	29.8
	2080	0.1	-0.3	0.3	0.5	26.0	1.2	3.6	23.8
	2100	-0.1	-0.6	0.2	0.3	26.0	1.3	3.7	22.5
IND	2014	-2.1	-6.2	0.3	0.3	34.0	4.4	1.9	27.9
	2020	-1.6	-4.5	0.2	0.3	34.0	4.4	2.4	29.6
	2040	-0.5	-1.9	0.2	0.2	34.0	4.8	1.8	33.6
	2060	-0.1	-0.5	0.2	0.2	34.0	5.6	1.0	40.1
	2080	0.0	-0.5	0.2	0.3	34.0	5.3	1.6	40.4
	2100	-0.1	-0.6	0.2	0.3	34.0	6.0	2.9	49.1
RUS	2014	-1.4	-5.5	0.6	1.0	27.9	7.1	7.4	22.8
	2020	-0.9	-4.0	0.5	0.5	27.9	8.6	10.6	29.2
	2040	-0.3	-2.0	0.0	0.3	27.9	11.9	13.0	44.6
	2060	0.0	-0.5	0.2	0.2	27.9	15.8	7.4	75.6
	2080	0.1	-0.3	0.3	0.4	27.9	16.5	8.2	94.6
	2100	0.2	-0.5	0.4	0.5	27.9	19.1	11.7	131.1
BRA	2014	-1.6	-6.6	0.6	0.8	47.3	4.7	5.9	34.4
	2020	-1.4	-4.8	0.5	0.6	47.3	4.9	7.7	40.8
	2040	-0.5	-2.1	0.4	0.4	47.3	5.9	7.4	57.0
	2060	0.1	-0.5	0.4	0.4	47.3	6.6	4.7	60.8
	2080	0.1	-0.4	0.3	0.4	47.3	6.2	9.2	68.9
	2100	-0.1	-0.6	0.2	0.3	47.3	7.6	19.8	89.5

Appendix Table 3 Continued: Corporate Tax Elimination Macro Aggregates and Tax Rates

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %									
	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
GBR	2014	-1.2	-5.3	0.7	0.5	25.0	5.4	7.7	38.9
	2020	-1.2	-4.2	0.7	0.5	25.0	5.9	9.9	40.9
	2040	-0.5	-2.1	0.0	0.4	25.0	6.8	12.6	48.2
	2060	0.0	-0.4	0.0	0.3	25.0	8.3	6.9	69.9
	2080	0.0	-0.5	0.2	0.3	25.0	7.1	5.0	65.3
	2100	0.0	-0.4	0.4	0.4	25.0	7.1	6.6	62.2
CAN	2014	-1.7	-5.2	0.7	0.5	23.9	16.0	1.5	23.8
	2020	-1.0	-4.3	0.6	0.5	23.9	18.0	2.0	25.6
	2040	-0.5	-1.8	0.0	0.0	23.9	22.3	4.2	27.2
	2060	0.0	-1.0	0.0	0.3	23.9	23.5	4.6	28.8
	2080	-0.3	-0.9	0.0	0.0	23.9	26.4	3.3	34.1
	2100	0.0	-0.5	0.2	0.2	23.9	26.9	2.8	39.9
MENA	2014	-1.3	-5.7	0.5	0.3	17.5	2.0	0.9	15.2
	2020	-1.1	-4.0	0.0	0.2	17.5	3.1	1.2	26.3
	2040	-0.5	-1.6	0.2	0.2	17.5	5.5	1.7	54.6
	2060	0.0	-0.4	0.2	0.3	17.5	6.7	1.7	72.6
	2080	0.1	-0.3	0.3	0.4	17.5	7.1	2.6	83.4
	2100	0.1	-0.4	0.3	0.4	17.5	7.7	3.8	95.6
MEX	2014	-1.5	-5.8	0.9	0.8	19.7	4.0	2.9	13.2
	2020	-1.2	-3.6	0.7	0.6	19.7	4.1	3.4	15.1
	2040	-0.6	-1.8	0.0	0.3	19.7	4.8	4.2	19.6
	2060	-0.2	-0.5	0.0	0.1	19.7	5.0	4.2	20.5
	2080	-0.1	-0.6	0.0	0.1	19.7	5.1	7.5	21.5
	2100	-0.3	-0.7	0.0	0.0	19.7	5.8	12.8	24.1
SAF	2014	-2.0	-5.3	2.3	0.0	14.3	13.8	4.0	17.5
	2020	0.0	-4.3	0.0	0.0	14.3	13.1	5.5	18.1
	2040	0.0	-2.5	0.0	0.9	14.3	12.3	12.9	17.5
	2060	-0.8	-0.9	0.0	0.0	14.3	12.1	17.5	16.1
	2080	0.0	-0.6	0.0	0.0	14.3	14.3	17.1	17.9
	2100	0.0	-0.6	0.0	0.0	14.3	15.2	15.4	20.4
SAP	2014	-2.0	-5.8	0.3	0.3	25.3	2.8	0.6	20.5
	2020	-1.3	-4.2	0.2	0.4	25.3	2.7	0.6	19.1
	2040	-0.4	-1.8	0.2	0.3	25.3	3.2	0.5	18.9
	2060	-0.1	-0.5	0.2	0.2	25.3	3.2	0.6	22.0
	2080	-0.1	-0.5	0.1	0.2	25.3	3.4	1.7	22.9
	2100	-0.1	-0.7	0.1	0.2	25.3	3.9	2.6	22.9
SLA	2014	-1.8	-5.7	0.5	0.4	27.5	1.6	3.6	25.8
	2020	-1.2	-4.3	0.0	0.4	27.5	1.8	4.4	31.6
	2040	-0.5	-1.7	0.2	0.2	27.5	2.2	4.5	41.3
	2060	-0.1	-0.6	0.1	0.2	27.5	2.3	4.0	43.1
	2080	-0.1	-0.5	0.1	0.2	27.5	2.0	4.9	43.3
	2100	-0.1	-0.7	0.1	0.2	27.5	2.0	7.5	52.0

Appendix Table 3 Continued: Corporate Tax Elimination Macro Aggregates and Tax Rates

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %									
	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
SOV	2014	-2.0	-5.4	0.0	0.0	17.5	7.0	2.1	33.6
	2020	0.0	-3.4	0.0	1.7	17.5	8.4	3.1	42.2
	2040	-1.0	-1.2	0.0	0.0	17.5	9.0	3.5	48.4
	2060	0.0	-0.5	0.4	0.4	17.5	8.1	1.1	41.5
	2080	0.0	-0.4	0.2	0.4	17.5	6.7	1.2	34.7
	2100	0.0	-0.6	0.3	0.3	17.5	8.0	2.6	41.6
SSA	2014	-1.6	-6.0	0.0	0.0	30.5	3.6	0.1	21.8
	2020	-1.7	-4.8	0.0	0.0	30.5	3.9	0.1	27.1
	2040	-0.5	-1.9	0.1	0.3	30.5	4.7	0.1	38.9
	2060	0.0	-0.5	0.2	0.3	30.5	4.7	0.1	39.5
	2080	0.0	-0.4	0.2	0.4	30.5	4.5	0.1	35.0
	2100	0.0	-0.6	0.2	0.4	30.5	4.1	0.2	29.8
EEU	2014	-2.4	-4.9	0.0	0.0	15.1	7.5	10.3	32.3
	2020	-2.2	-2.3	0.0	0.0	15.1	8.1	12.9	34.9
	2040	-1.1	-1.3	0.0	0.9	15.1	8.5	9.3	43.9
	2060	0.0	-0.7	0.0	0.5	15.1	8.3	6.9	45.4
	2080	0.0	0.0	0.0	0.5	15.1	11.0	16.2	49.3
	2100	0.0	-0.6	0.3	0.3	15.1	12.4	14.9	63.7

Appendix Table 4: Corporate Tax Elimination Projected Factor Prices and Marginal Products

Corporate Tax Elimination Projected Factor Prices and Marginal Products							
	Year	Marginal Product of Capital	Global Interest Rate	Wage Rate		Marginal Product of Labor	
				Low Skilled	High Skilled	Low Skilled	High Skilled
USA	2014	12.59	5.11	1.00	2.50	1.00	2.50
	2020	12.86	5.37	1.00	2.43	1.00	2.43
	2025	13.37	5.87	0.99	2.34	0.99	2.34
	2030	14.06	6.56	0.97	2.24	0.97	2.24
	2035	14.84	7.33	0.95	2.14	0.95	2.14
	2040	15.74	8.24	0.93	2.04	0.93	2.04
	2060	15.61	8.11	0.97	1.95	0.97	1.95
	2080	14.66	7.17	1.01	2.00	1.01	2.00
	2100	14.28	6.78	1.02	2.02	1.02	2.02
WEU	2014	14.34	5.11	0.33	0.69	1.00	2.09
	2020	14.69	5.37	0.44	0.90	0.99	2.03
	2040	18.54	8.24	0.71	1.44	0.88	1.80
	2060	18.38	8.11	0.86	1.87	0.86	1.87
	2080	17.11	7.17	0.90	1.91	0.90	1.91
	2100	16.59	6.78	0.95	1.84	0.95	1.84
JKSH	2014	15.42	5.11	0.52	0.86	1.05	1.73
	2020	15.82	5.37	0.65	1.06	1.04	1.71
	2040	20.27	8.24	0.94	1.56	0.90	1.51
	2060	20.08	8.11	0.89	1.56	0.89	1.56
	2080	18.61	7.17	0.92	1.65	0.92	1.65
	2100	18.02	6.78	0.93	1.69	0.93	1.69
CHI	2014	14.40	5.11	0.14	0.29	1.01	2.04
	2020	14.75	5.37	0.28	0.58	0.99	2.03
	2040	18.63	8.24	0.64	1.36	0.85	1.87
	2060	18.46	8.11	0.81	2.03	0.81	2.03
	2080	17.18	7.17	0.82	2.22	0.82	2.22
	2100	16.67	6.78	0.83	2.27	0.83	2.27
IND	2014	15.23	5.11	0.07	0.11	1.09	1.66
	2020	15.63	5.37	0.12	0.18	1.08	1.63
	2040	19.98	8.24	0.25	0.38	0.94	1.44
	2060	19.79	8.11	0.46	0.71	0.94	1.47
	2080	18.35	7.17	0.65	1.04	0.97	1.55
	2100	17.78	6.78	0.85	1.35	0.99	1.57
RUS	2014	14.58	5.11	0.28	0.62	0.96	2.16
	2020	14.94	5.37	0.35	0.77	0.96	2.10
	2040	18.93	8.24	0.53	1.14	0.85	1.83
	2060	18.75	8.11	0.86	1.83	0.86	1.83
	2080	17.44	7.17	0.89	1.90	0.89	1.90
	2100	16.91	6.78	0.92	1.90	0.92	1.90
BRA	2014	17.19	5.11	0.20	0.32	1.00	1.61
	2020	17.68	5.37	0.33	0.52	0.99	1.57
	2040	23.13	8.24	0.65	1.04	0.85	1.38
	2060	22.90	8.11	0.85	1.41	0.85	1.41
	2080	21.10	7.17	0.89	1.47	0.89	1.47
	2100	20.37	6.78	0.90	1.50	0.90	1.50

Appendix Table 4 Continued: Corporate Tax Elimination Projected Factor Prices and Marginal Products

	Year	Marginal Product of Capital	Global Interest Rate	Wage Rate: Low Skilled	Wage Rate: High Skilled	Marginal Product of Labor: Low Skilled	Marginal Product of Labor: High Skilled
GBR	2014	14.31	5.11	0.76	1.30	1.08	1.85
	2020	14.66	5.37	0.76	1.32	1.06	1.83
	2040	18.48	8.24	0.74	1.30	0.93	1.64
	2060	18.32	8.11	0.78	1.40	0.93	1.67
	2080	17.05	7.17	0.85	1.58	0.95	1.77
	2100	16.54	6.78	0.91	1.75	0.96	1.83
CAN	2014	14.21	5.11	0.64	1.13	1.07	1.88
	2020	14.55	5.37	0.74	1.29	1.06	1.85
	2040	18.33	8.24	0.97	1.70	0.94	1.64
	2060	18.16	8.11	0.94	1.66	0.94	1.66
	2080	16.92	7.17	0.98	1.71	0.98	1.71
	2100	16.41	6.78	1.00	1.72	1.00	1.72
MENA	2014	13.69	5.11	0.09	0.14	1.16	1.76
	2020	14.01	5.37	0.14	0.21	1.14	1.74
	2040	17.49	8.24	0.27	0.42	1.01	1.55
	2060	17.33	8.11	0.50	0.78	1.01	1.58
	2080	16.19	7.17	0.70	1.12	1.04	1.65
	2100	15.72	6.78	0.91	1.46	1.05	1.69
MEX	2014	13.86	5.11	0.22	0.50	0.99	2.20
	2020	14.18	5.37	0.35	0.77	0.98	2.17
	2040	17.76	8.24	0.66	1.50	0.86	1.97
	2060	17.60	8.11	0.84	2.05	0.84	2.05
	2080	16.42	7.17	0.87	2.17	0.87	2.17
	2100	15.95	6.78	0.88	2.21	0.88	2.21
SAF	2014	13.46	5.11	0.19	0.41	1.03	2.18
	2020	13.76	5.37	0.23	0.49	1.02	2.15
	2040	17.11	8.24	0.33	0.70	0.89	1.95
	2060	16.97	8.11	0.49	1.11	0.88	2.01
	2080	15.86	7.17	0.65	1.50	0.91	2.10
	2100	15.41	6.78	0.81	1.89	0.92	2.15
SAP	2014	14.34	5.11	0.11	0.21	1.01	2.05
	2020	14.69	5.37	0.25	0.52	0.99	2.04
	2040	18.53	8.24	0.62	1.37	0.85	1.90
	2060	18.36	8.11	0.83	1.98	0.83	1.98
	2080	17.09	7.17	0.85	2.11	0.85	2.11
	2100	16.58	6.78	0.86	2.15	0.86	2.15
SLA	2014	14.54	5.11	0.16	0.33	0.98	2.11
	2020	14.90	5.37	0.19	0.41	0.97	2.07
	2040	18.87	8.24	0.29	0.62	0.85	1.83
	2060	18.69	8.11	0.46	1.01	0.85	1.87
	2080	17.39	7.17	0.61	1.40	0.87	1.99
	2100	16.86	6.78	0.77	1.78	0.88	2.04

Appendix Table 4 Continued: Corporate Tax Elimination Projected Factor Prices and Marginal Products

Corporate Tax Elimination Projected Factor Prices and Marginal Products							
	Year	Marginal Product of Capital	Global Interest Rate	Wage Rates		Marginal Product of Labor	
				Low Skilled	High Skilled	Low Skilled	High Skilled
SOV	2014	13.69	5.11	0.11	0.23	1.03	2.12
	2020	14.01	5.37	0.16	0.32	1.02	2.08
	2040	17.49	8.24	0.27	0.55	0.90	1.87
	2060	17.33	8.11	0.45	0.99	0.89	1.94
	2080	16.19	7.17	0.62	1.43	0.90	2.08
	2100	15.72	6.78	0.78	1.87	0.90	2.16
SSA	2014	14.85	5.11	0.04	0.09	1.01	1.95
	2020	15.23	5.37	0.09	0.18	0.99	1.93
	2040	19.36	8.24	0.21	0.42	0.86	1.73
	2060	19.18	8.11	0.40	0.85	0.85	1.79
	2080	17.81	7.17	0.58	1.28	0.87	1.92
	2100	17.26	6.78	0.74	1.73	0.87	2.02
EEU	2014	13.52	5.11	0.08	0.17	1.04	2.13
	2020	13.82	5.37	0.19	0.38	1.03	2.10
	2040	17.21	8.24	0.46	0.96	0.90	1.92
	2060	17.06	8.11	0.88	2.01	0.88	2.01
	2080	15.94	7.17	0.88	2.20	0.88	2.20
	2100	15.49	6.78	0.91	2.16	0.91	2.16

Appendix Table 5: BCFT Reform Macro Aggregates and Tax Rates

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %

	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
USA	2014	7.9	17.9	3.2	3.1	16.1	11.5	5.5	33.1
	2020	7.2	19.5	1.5	0.7	16.1	12.9	6.8	33.1
	2025	6.6	20.7	0.2	-1.0	16.1	13.0	8.1	33.1
	2030	6.7	22.3	-0.4	-2.1	16.1	12.1	9.7	33.1
	2035	6.7	23.9	-1.0	-3.3	16.1	11.4	10.8	33.1
	2040	6.4	24.9	-1.5	-4.4	16.1	9.7	11.7	33.1
	2060	2.6	20.1	-4.9	-9.1	16.1	6.2	14.8	33.1
	2080	-1.4	13.9	-8.2	-12.3	16.1	8.1	12.8	33.1
	2100	-1.1	13.6	-7.4	-11.6	16.1	13.6	11.6	33.1
WEU	2014	-1.2	-4.2	0.4	0.4	25.4	16.0	11.0	33.0
	2020	-0.2	-1.3	0.3	0.4	25.4	16.7	12.8	32.8
	2040	1.2	2.8	0.5	0.4	25.4	17.3	11.0	37.1
	2060	1.8	3.7	1.0	1.1	25.4	16.3	6.4	37.5
	2080	2.3	3.7	1.6	1.9	25.4	14.2	9.3	30.0
	2100	2.4	3.4	1.9	2.4	25.4	13.9	15.2	24.2
JKSH	2014	-1.0	-4.2	0.6	0.8	35.5	12.5	2.1	18.1
	2020	0.0	-1.0	0.6	0.8	35.5	13.1	2.7	16.9
	2040	2.0	3.6	1.2	1.4	35.5	12.6	4.9	12.7
	2060	2.5	4.8	1.7	2.2	35.5	10.5	3.8	9.6
	2080	2.2	3.9	1.8	2.2	35.5	8.9	2.8	8.7
	2100	2.0	3.1	1.4	2.0	35.5	9.3	3.1	8.6
CHI	2014	-1.2	-4.2	0.2	0.3	26.0	1.8	1.5	48.2
	2020	-0.3	-1.3	0.3	0.4	26.0	1.7	1.9	45.3
	2040	1.3	2.9	0.4	0.6	26.0	1.4	2.3	34.6
	2060	2.4	4.1	1.2	1.9	26.0	1.3	2.0	30.8
	2080	2.5	3.7	1.2	2.4	26.0	1.2	3.6	24.7
	2100	1.7	2.5	0.8	1.9	26.0	1.3	3.8	23.3
IND	2014	-1.6	-4.8	0.0	0.0	34.0	4.4	1.9	27.3
	2020	-0.8	-1.6	0.0	0.0	34.0	4.4	2.4	28.9
	2040	0.7	2.3	-0.1	-0.1	34.0	4.7	1.7	33.0
	2060	0.8	2.6	-0.1	-0.1	34.0	5.6	1.0	39.6
	2080	0.7	2.0	0.0	-0.1	34.0	5.3	1.6	40.0
	2100	0.5	1.4	0.0	0.0	34.0	6.0	2.9	48.8
RUS	2014	-1.4	-4.5	0.0	0.0	27.9	7.1	7.4	22.6
	2020	-0.4	-1.5	0.0	0.0	27.9	8.6	10.5	29.2
	2040	0.7	2.5	-0.4	0.0	27.9	12.1	12.9	45.1
	2060	1.0	2.7	0.0	0.0	27.9	15.9	7.4	76.3
	2080	0.8	2.2	0.3	0.3	27.9	16.6	8.2	95.4
	2100	0.8	1.6	0.3	0.4	27.9	19.2	11.7	132.1
BRA	2014	-1.6	-5.4	0.0	0.0	47.3	4.6	5.9	33.5
	2020	-0.5	-2.1	0.0	0.0	47.3	4.9	7.6	40.0
	2040	0.7	2.4	-0.2	-0.3	47.3	5.9	7.4	56.2
	2060	1.0	2.9	0.0	-0.1	47.3	6.6	4.7	60.2
	2080	1.1	2.4	0.2	0.2	47.3	6.2	9.3	68.9
	2100	0.8	1.8	0.2	0.4	47.3	7.6	19.8	89.9

Appendix Table 5 Continued: BCFT Reform Macro Aggregates and Tax Rates

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %

	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
GBR	2014	-0.6	-3.5	0.7	0.5	25.0	5.5	7.7	39.0
	2020	0.0	-1.2	0.7	0.5	25.0	6.0	9.8	41.3
	2040	1.1	2.8	0.0	0.8	25.0	6.9	12.5	49.4
	2060	1.4	3.0	0.3	0.5	25.0	8.4	6.9	71.4
	2080	1.0	2.4	0.4	0.6	25.0	7.2	5.1	66.2
	2100	1.0	1.9	0.5	0.7	25.0	7.1	6.6	63.0
CAN	2014	-0.6	-3.5	0.7	0.5	23.9	16.0	1.5	23.8
	2020	0.0	-1.1	0.6	0.5	23.9	18.2	2.0	25.8
	2040	1.8	3.6	1.0	1.1	23.9	22.9	4.1	27.9
	2060	2.2	3.8	1.6	1.7	23.9	24.3	4.6	29.9
	2080	1.5	3.0	1.1	1.2	23.9	27.2	3.3	35.5
	2100	1.4	2.3	1.0	1.2	23.9	27.6	2.8	41.3
MENA	2014	-1.1	-4.1	0.0	0.3	17.5	2.0	0.9	15.0
	2020	-0.4	-1.5	0.0	0.0	17.5	3.1	1.2	26.2
	2040	0.7	2.4	0.1	0.1	17.5	5.6	1.7	54.9
	2060	1.0	2.7	0.2	0.2	17.5	6.8	1.7	72.9
	2080	0.9	2.1	0.2	0.3	17.5	7.1	2.6	83.8
	2100	0.7	1.5	0.3	0.3	17.5	7.7	3.8	95.8
MEX	2014	-1.5	-4.3	0.0	0.0	19.7	4.0	2.9	13.0
	2020	-0.6	-1.2	0.0	0.0	19.7	4.1	3.4	14.9
	2040	0.6	2.1	-0.3	-0.3	19.7	4.8	4.2	19.5
	2060	0.9	2.7	0.0	0.1	19.7	5.1	4.2	20.6
	2080	0.9	2.2	0.2	0.4	19.7	5.1	7.5	21.7
	2100	0.7	1.5	0.2	0.4	19.7	5.8	12.9	24.4
SAF	2014	-2.0	-5.3	0.0	0.0	14.3	13.7	4.1	17.3
	2020	0.0	-1.4	0.0	0.0	14.3	13.1	5.4	18.0
	2040	1.1	2.5	0.0	0.9	14.3	12.5	12.8	17.6
	2060	0.8	2.7	0.0	0.0	14.3	12.3	17.5	16.3
	2080	1.1	1.7	0.0	0.0	14.3	14.5	17.2	18.2
	2100	0.6	1.6	0.0	0.3	14.3	15.3	15.5	20.6
SAP	2014	-1.4	-4.2	0.0	0.3	25.3	2.8	0.6	20.2
	2020	-0.6	-1.6	0.0	0.0	25.3	2.7	0.6	18.9
	2040	0.7	2.2	-0.1	-0.2	25.3	3.2	0.5	18.8
	2060	1.0	2.7	0.1	0.1	25.3	3.2	0.6	22.0
	2080	0.8	2.1	0.2	0.1	25.3	3.4	1.7	23.1
	2100	0.6	1.4	0.1	0.1	25.3	3.9	2.6	23.1
SLA	2014	-1.8	-4.3	0.0	0.0	27.5	1.6	3.6	25.4
	2020	-0.4	-1.6	0.0	0.0	27.5	1.8	4.4	31.2
	2040	0.7	2.3	0.0	-0.2	27.5	2.2	4.5	41.3
	2060	0.8	2.4	0.0	-0.2	27.5	2.3	4.0	43.2
	2080	0.7	1.9	0.0	0.0	27.5	2.0	4.9	43.4
	2100	0.6	1.4	0.1	0.1	27.5	2.0	7.5	52.3

Appendix Table 5 Continued: BCFT Reform Macro Aggregates and Tax Rates

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %

	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
SOV	2014	-2.0	-3.6	0.0	0.0	17.5	7.0	2.1	33.1
	2020	0.0	-1.7	0.0	0.0	17.5	8.4	3.1	41.9
	2040	1.0	2.4	0.0	0.0	17.5	9.1	3.5	48.6
	2060	0.9	2.5	0.0	0.4	17.5	8.2	1.1	41.7
	2080	0.8	2.0	0.0	0.2	17.5	6.8	1.2	34.9
	2100	0.8	1.6	0.3	0.6	17.5	8.1	2.6	42.0
SSA	2014	-1.6	-4.3	0.0	0.0	30.5	3.6	0.1	21.8
	2020	-0.6	-1.8	0.0	0.0	30.5	4.0	0.1	27.2
	2040	1.1	2.6	0.1	0.3	30.5	4.7	0.1	39.2
	2060	1.2	3.0	0.3	0.4	30.5	4.8	0.1	39.8
	2080	1.0	2.3	0.3	0.4	30.5	4.5	0.1	35.1
	2100	0.8	1.7	0.3	0.4	30.5	4.0	0.2	29.9
EEU	2014	-2.4	-2.4	0.0	0.0	15.1	7.5	10.3	32.0
	2020	-2.2	0.0	0.0	0.0	15.1	8.2	12.8	34.7
	2040	0.0	2.6	0.0	0.0	15.1	8.5	9.2	44.1
	2060	1.2	2.8	0.6	0.5	15.1	8.4	6.9	46.0
	2080	1.4	3.0	0.9	0.9	15.1	11.1	16.3	50.4
	2100	1.1	1.7	0.8	0.5	15.1	12.6	15.0	64.9

Appendix Table 6: BCFT Reform Projected Factor Prices and Marginal Products

BCFT Reform Projected Factor Prices and Marginal Products							
	Year	Marginal Product	Global	Wage Rate		Marginal Product of Labor	
		of Capital	Interest Rate	Low Skilled	High Skilled	Low Skilled	High Skilled
USA	2014	13.42	4.98	1.00	2.46	1.00	2.46
	2020	13.63	5.16	1.00	2.41	1.00	2.41
	2025	14.17	5.60	0.99	2.33	0.99	2.33
	2030	14.94	6.24	0.97	2.24	0.97	2.24
	2035	15.82	6.98	0.94	2.15	0.94	2.15
	2040	16.86	7.85	0.92	2.06	0.92	2.06
	2060	16.83	7.83	0.94	1.99	0.94	1.99
	2080	15.78	6.95	0.98	2.04	0.98	2.04
	2100	15.38	6.62	0.99	2.06	0.99	2.06
WEU	2014	14.18	4.98	0.34	0.72	1.03	2.16
	2020	14.41	5.16	0.46	0.94	1.03	2.12
	2040	18.03	7.85	0.74	1.51	0.92	1.88
	2060	17.99	7.83	0.90	1.94	0.90	1.94
	2080	16.82	6.95	0.94	1.99	0.94	1.99
	2100	16.37	6.62	0.99	1.91	0.99	1.91
JKSH	2014	15.23	4.98	0.54	0.89	1.09	1.79
	2020	15.49	5.16	0.67	1.10	1.08	1.77
	2040	19.68	7.85	0.99	1.63	0.95	1.58
	2060	19.63	7.83	0.93	1.62	0.93	1.62
	2080	18.28	6.95	0.96	1.71	0.96	1.71
	2100	17.76	6.62	0.97	1.75	0.97	1.75
CHI	2014	14.24	4.98	0.15	0.30	1.05	2.11
	2020	14.47	5.16	0.29	0.60	1.03	2.11
	2040	18.11	7.85	0.67	1.42	0.89	1.95
	2060	18.07	7.83	0.85	2.11	0.85	2.11
	2080	16.89	6.95	0.86	2.29	0.86	2.29
	2100	16.44	6.62	0.87	2.34	0.87	2.34
IND	2014	15.05	4.98	0.07	0.11	1.13	1.72
	2020	15.31	5.16	0.13	0.19	1.12	1.70
	2040	19.40	7.85	0.26	0.39	0.98	1.51
	2060	19.35	7.83	0.47	0.74	0.98	1.53
	2080	18.03	6.95	0.68	1.08	1.01	1.61
	2100	17.52	6.62	0.88	1.40	1.02	1.63
RUS	2014	14.41	4.98	0.29	0.64	1.00	2.24
	2020	14.65	5.16	0.36	0.80	1.00	2.19
	2040	18.39	7.85	0.56	1.19	0.89	1.91
	2060	18.35	7.83	0.89	1.91	0.89	1.91
	2080	17.14	6.95	0.93	1.97	0.93	1.97
	2100	16.67	6.62	0.95	1.97	0.95	1.97
BRA	2014	16.96	4.98	0.20	0.33	1.04	1.67
	2020	17.28	5.16	0.34	0.54	1.03	1.64
	2040	22.40	7.85	0.68	1.09	0.89	1.44
	2060	22.35	7.83	0.89	1.47	0.89	1.47
	2080	20.69	6.95	0.92	1.53	0.92	1.53
	2100	20.05	6.62	0.94	1.55	0.94	1.55

Appendix Table 6 Continued: House Tax Projected Factor Prices and Marginal Products

BCFT Reform Projected Factor Prices and Marginal Products							
	Year	Marginal Product	Global	Wage Rate		Marginal Product of Labor	
		of Capital	Interest Rate	Low Skilled	High Skilled	Low Skilled	High Skilled
GBR	2014	14.15	4.98	0.78	1.35	1.12	1.92
	2020	14.37	5.16	0.79	1.37	1.11	1.91
	2040	17.97	7.85	0.77	1.35	0.97	1.71
	2060	17.93	7.83	0.81	1.45	0.97	1.74
	2080	16.77	6.95	0.89	1.64	0.99	1.83
	2100	16.32	6.62	0.95	1.81	0.99	1.90
CAN	2014	14.05	4.98	0.67	1.17	1.11	1.95
	2020	14.28	5.16	0.77	1.35	1.11	1.92
	2040	17.82	7.85	1.02	1.78	0.98	1.71
	2060	17.78	7.83	0.98	1.73	0.98	1.73
	2080	16.63	6.95	1.02	1.77	1.02	1.77
	2100	16.19	6.62	1.04	1.78	1.04	1.78
MENA	2014	13.54	4.98	0.09	0.14	1.20	1.82
	2020	13.75	5.16	0.15	0.22	1.19	1.81
	2040	17.02	7.85	0.29	0.44	1.05	1.62
	2060	16.99	7.83	0.52	0.81	1.05	1.64
	2080	15.93	6.95	0.73	1.16	1.08	1.72
	2100	15.52	6.62	0.94	1.51	1.09	1.75
MEX	2014	13.71	4.98	0.23	0.52	1.03	2.29
	2020	13.92	5.16	0.36	0.80	1.02	2.26
	2040	17.28	7.85	0.69	1.57	0.90	2.06
	2060	17.25	7.83	0.88	2.13	0.88	2.13
	2080	16.16	6.95	0.90	2.25	0.90	2.25
	2100	15.74	6.62	0.91	2.29	0.91	2.29
SAF	2014	13.32	4.98	0.20	0.42	1.06	2.26
	2020	13.52	5.16	0.24	0.51	1.06	2.24
	2040	16.66	7.85	0.34	0.73	0.93	2.04
	2060	16.63	7.83	0.51	1.15	0.92	2.09
	2080	15.61	6.95	0.68	1.56	0.95	2.18
	2100	15.22	6.62	0.84	1.96	0.95	2.23
SAP	2014	14.17	4.98	0.11	0.22	1.05	2.12
	2020	14.40	5.16	0.26	0.54	1.03	2.13
	2040	18.02	7.85	0.65	1.43	0.88	1.99
	2060	17.98	7.83	0.86	2.07	0.86	2.07
	2080	16.81	6.95	0.88	2.19	0.88	2.19
	2100	16.36	6.62	0.90	2.23	0.90	2.23
SLA	2014	14.38	4.98	0.16	0.35	1.01	2.19
	2020	14.61	5.16	0.20	0.43	1.01	2.15
	2040	18.34	7.85	0.30	0.64	0.89	1.91
	2060	18.30	7.83	0.47	1.05	0.88	1.95
	2080	17.09	6.95	0.64	1.46	0.90	2.07
	2100	16.63	6.62	0.80	1.85	0.91	2.12

Appendix Table 6 Continued: BCFT Reform Projected Factor Prices and Marginal Products

BCFT Reform Projected Factor Prices and Marginal Products							
	Year	Marginal Product	Global	Wage Rates		Marginal Product of Labor	
		of Capital	Interest Rate	Low Skilled	High Skilled	Low Skilled	High Skilled
SOV	2014	13.54	4.98	0.12	0.24	1.07	2.19
	2020	13.75	5.16	0.16	0.33	1.06	2.17
	2040	17.02	7.85	0.28	0.58	0.94	1.96
	2060	16.99	7.83	0.47	1.03	0.92	2.02
	2080	15.93	6.95	0.64	1.49	0.93	2.16
	2100	15.52	6.62	0.81	1.94	0.93	2.24
SSA	2014	14.68	4.98	0.05	0.09	1.05	2.02
	2020	14.92	5.16	0.10	0.19	1.03	2.01
	2040	18.81	7.85	0.22	0.44	0.90	1.81
	2060	18.76	7.83	0.42	0.88	0.89	1.86
	2080	17.51	6.95	0.60	1.33	0.90	2.00
	2100	17.02	6.62	0.77	1.79	0.90	2.09
EEU	2014	13.37	4.98	0.09	0.18	1.08	2.20
	2020	13.58	5.16	0.19	0.40	1.07	2.18
	2040	16.76	7.85	0.48	1.01	0.94	2.01
	2060	16.72	7.83	0.91	2.10	0.91	2.10
	2080	15.69	6.95	0.92	2.28	0.92	2.28
	2100	15.30	6.62	0.95	2.24	0.95	2.24

Appendix Table 7: Foreign Tax Matching Macro Aggregates and Tax Rates

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %

	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
USA	2014	3.8	4.8	3.2	3.5	16.1	11.0	5.5	33.1
	2020	3.7	8.6	1.2	0.7	16.1	12.5	6.8	33.1
	2025	3.5	10.8	-0.2	-1.2	16.1	12.5	8.0	33.1
	2030	3.4	12.9	-1.2	-2.6	16.1	11.5	9.6	33.1
	2035	3.3	14.5	-2.0	-4.1	16.1	10.6	10.7	33.1
	2040	2.7	15.3	-3.0	-5.7	16.1	8.8	11.6	33.1
	2060	-1.2	12.0	-7.3	-11.1	16.1	5.0	14.8	33.1
	2080	-4.8	6.8	-10.4	-14.2	16.1	6.7	12.6	33.1
	2100	-3.5	7.9	-8.6	-12.7	16.1	12.5	11.4	33.1
WEU	2014	-1.1	-4.0	0.5	0.6	11.8	16.3	11.0	35.5
	2020	0.6	1.3	0.2	0.3	11.8	17.0	12.7	35.1
	2040	3.6	10.8	-0.1	-0.2	11.8	17.9	10.8	40.0
	2060	4.4	13.3	-0.1	-0.1	11.8	16.9	6.3	40.4
	2080	4.3	12.6	-0.1	0.6	11.8	14.7	9.3	32.2
	2100	3.9	11.5	-0.6	1.0	11.8	14.2	15.3	25.6
JKSH	2014	0.5	1.7	0.0	-0.4	16.5	13.1	2.1	19.8
	2020	2.2	7.8	-0.6	-0.6	16.5	13.6	2.7	18.2
	2040	5.4	19.3	-1.2	-1.6	16.5	12.8	4.9	13.4
	2060	5.1	20.5	-2.9	-2.7	16.5	10.7	3.8	10.0
	2080	4.5	18.3	-3.2	-3.1	16.5	8.9	2.7	9.0
	2100	4.2	17.2	-3.3	-3.1	16.5	9.2	3.1	8.9
CHI	2014	-0.9	-3.5	0.5	0.8	12.1	1.9	1.5	56.1
	2020	1.0	2.1	0.5	0.7	12.1	1.9	1.9	52.4
	2040	4.5	12.1	0.5	0.8	12.1	1.6	2.3	40.6
	2060	5.1	14.4	0.4	0.6	12.1	1.4	1.9	34.8
	2080	4.3	12.9	0.0	0.1	12.1	1.3	3.6	26.8
	2100	3.7	11.7	-0.3	-0.3	12.1	1.4	3.8	24.9
IND	2014	0.7	1.2	0.3	0.3	15.8	4.9	1.9	32.1
	2020	2.6	7.5	0.2	0.3	15.8	4.9	2.4	34.1
	2040	6.3	19.4	0.0	0.0	15.8	5.3	1.7	39.6
	2060	7.0	21.9	-0.1	-0.2	15.8	6.2	1.0	46.8
	2080	6.6	20.3	-0.1	-0.2	15.8	5.9	1.6	47.4
	2100	6.2	19.2	-0.1	-0.2	15.8	6.6	2.9	56.6
RUS	2014	0.0	-1.5	1.1	2.0	13.0	7.8	7.5	26.3
	2020	1.3	3.5	1.1	1.0	13.0	9.4	10.5	33.4
	2040	4.2	13.7	0.4	0.6	13.0	13.1	12.7	52.1
	2060	5.5	16.1	0.4	0.5	13.0	17.0	7.3	87.5
	2080	5.5	15.6	0.9	1.1	13.0	17.7	8.2	109.4
	2100	5.8	14.8	1.1	1.4	13.0	20.2	11.7	150.4
BRA	2014	4.8	13.9	0.0	0.0	22.0	4.9	5.9	37.7
	2020	6.4	20.9	-0.5	-0.3	22.0	5.2	7.6	44.7
	2040	10.7	37.8	-1.0	-1.4	22.0	6.3	7.2	63.6
	2060	11.2	40.3	-1.5	-1.9	22.0	7.0	4.6	68.1
	2080	10.4	37.3	-1.7	-2.2	22.0	6.7	9.3	78.1
	2100	10.2	36.1	-1.4	-1.9	22.0	8.1	19.8	99.7

Appendix Table 7 Continued: Foreign Tax Cut Macro Aggregates and Tax Rates

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %

	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
GBR	2014	0.0	-2.9	1.5	1.5	11.6	5.8	7.7	44.7
	2020	1.2	1.8	1.4	1.5	11.6	6.3	9.8	46.7
	2040	3.8	10.6	0.0	0.8	11.6	7.2	12.3	55.4
	2060	5.2	13.9	0.7	0.8	11.6	8.8	6.7	81.3
	2080	5.4	13.5	1.1	1.6	11.6	7.9	5.0	78.7
	2100	5.5	13.0	1.6	1.9	11.6	7.8	6.6	74.5
CAN	2014	-1.2	-4.6	0.7	0.5	11.1	16.7	1.5	26.5
	2020	0.5	0.5	0.6	0.5	11.1	18.9	1.9	28.4
	2040	3.7	10.3	0.0	0.4	11.1	23.4	4.1	30.1
	2060	4.4	12.0	0.4	0.3	11.1	24.8	4.5	32.0
	2080	4.0	11.5	0.3	0.2	11.1	28.0	3.3	38.4
	2100	4.4	11.3	1.0	1.0	11.1	28.9	2.8	45.8
MENA	2014	-1.6	-7.6	0.9	1.1	8.1	2.3	0.9	18.8
	2020	-0.2	-2.5	0.3	0.8	8.1	3.5	1.2	31.4
	2040	2.1	5.9	0.7	0.9	8.1	6.0	1.7	64.0
	2060	3.3	8.4	0.9	1.1	8.1	7.2	1.7	84.1
	2080	3.5	7.9	1.1	1.4	8.1	7.6	2.6	96.2
	2100	3.5	7.4	1.3	1.6	8.1	8.2	3.8	109.3
MEX	2014	-1.5	-6.5	0.9	1.6	9.2	4.4	2.9	15.1
	2020	0.0	-1.2	0.7	0.6	9.2	4.6	3.3	17.2
	2040	2.4	7.1	0.3	0.3	9.2	5.3	4.1	22.6
	2060	3.0	8.9	0.0	-0.1	9.2	5.6	4.2	23.6
	2080	2.6	7.9	-0.1	-0.3	9.2	5.6	7.5	24.5
	2100	2.2	7.2	-0.2	-0.5	9.2	6.3	12.9	27.0
SAF	2014	-2.0	-8.8	2.3	0.0	6.7	15.4	4.0	20.7
	2020	0.0	-2.9	0.0	1.5	6.7	14.9	5.4	21.7
	2040	2.2	3.7	1.0	1.9	6.7	14.4	12.6	21.7
	2060	2.3	6.2	0.7	1.4	6.7	14.2	17.2	20.0
	2080	2.7	5.6	1.0	1.4	6.7	16.5	17.1	21.9
	2100	3.0	5.9	1.2	2.0	6.7	17.7	15.4	25.2
SAP	2014	-0.8	-3.9	0.3	0.8	11.8	3.2	0.6	24.4
	2020	0.8	1.6	0.4	0.6	11.8	3.1	0.6	23.3
	2040	4.1	11.3	0.3	0.4	11.8	3.8	0.5	24.2
	2060	4.7	13.5	0.2	0.2	11.8	3.7	0.6	27.7
	2080	4.1	12.2	0.0	-0.1	11.8	3.9	1.7	27.7
	2100	3.6	11.1	-0.2	-0.4	11.8	4.4	2.6	27.0
SLA	2014	-0.4	-2.2	1.0	0.9	12.8	1.7	3.6	28.9
	2020	1.5	3.1	0.4	0.7	12.8	1.9	4.4	35.3
	2040	4.3	12.7	0.0	0.0	12.8	2.4	4.4	47.0
	2060	4.8	15.1	-0.1	-0.3	12.8	2.5	4.0	49.0
	2080	4.5	13.9	-0.1	-0.2	12.8	2.2	4.9	49.5
	2100	4.3	13.0	-0.1	-0.2	12.8	2.2	7.5	58.6

Appendix Table 7 Continued: Foreign Tax Cut Macro Aggregates and Tax Rates

GDP, Capital Stocks and Labor Supply are % Change from Contemporaneous Baseline. Tax Rates in %

	Year	GDP	Capital Stock	Labor Supply		Corporate Tax	Income Tax	Pension Tax	Consumption Tax
				Low Skilled	High Skilled				
SOV	2014	0.0	-7.1	0.0	0.0	8.1	7.7	2.1	38.6
	2020	0.0	-1.7	2.1	1.7	8.1	9.0	3.1	48.0
	2040	2.0	6.0	0.0	0.8	8.1	9.8	3.4	56.1
	2060	3.4	8.0	0.8	1.4	8.1	9.1	1.1	49.0
	2080	3.5	7.8	1.0	1.5	8.1	7.6	1.2	41.6
	2100	3.3	7.3	1.2	1.5	8.1	8.9	2.6	48.6
SSA	2014	4.0	-1.7	0.0	0.0	14.2	3.7	0.1	23.9
	2020	1.1	4.2	0.0	0.0	14.2	4.2	0.1	29.9
	2040	5.2	15.6	0.0	0.1	14.2	5.0	0.1	43.9
	2060	6.0	18.2	-0.1	0.0	14.2	5.1	0.1	44.4
	2080	5.4	16.7	-0.1	-0.2	14.2	4.8	0.1	39.3
	2100	4.9	15.4	-0.4	-0.5	14.2	4.4	0.2	33.5
EEU	2014	-2.4	-7.3	0.0	0.0	7.0	8.2	10.3	37.8
	2020	-2.2	-2.3	2.8	0.0	7.0	9.0	12.7	40.9
	2040	2.1	5.1	1.1	1.9	7.0	9.5	9.0	53.5
	2060	3.6	7.6	1.7	2.1	7.0	9.4	6.8	55.4
	2080	3.7	7.6	1.8	2.7	7.0	12.0	16.2	58.3
	2100	3.6	6.6	1.9	2.3	7.0	13.6	15.0	75.7

Appendix Table 8: Foreign Tax Matching Projected Factor Prices and Marginal Products

	Foreign Tax Cut Projected Factor Prices and Marginal Products						
	Year	Marginal Product of Capital	Global Interest Rate	Wage Rate		Marginal Product of Labor	
				Low Skilled	High Skilled	Low Skilled	High Skilled
USA	2014	14.51	5.89	1.00	2.46	1.00	2.46
	2020	14.49	5.87	1.01	2.43	1.01	2.43
	2025	14.94	6.25	1.00	2.36	1.00	2.36
	2030	15.68	6.87	0.98	2.27	0.98	2.27
	2035	16.55	7.59	0.96	2.18	0.96	2.18
	2040	17.60	8.47	0.93	2.09	0.93	2.09
	2060	17.34	8.25	0.96	2.03	0.96	2.03
	2080	16.21	7.31	1.00	2.09	1.00	2.09
	2100	15.78	6.95	1.02	2.12	1.02	2.12
WEU	2014	14.18	5.89	0.36	0.75	1.08	2.25
	2020	14.16	5.87	0.48	0.99	1.09	2.22
	2040	17.11	8.47	0.79	1.61	0.98	2.01
	2060	16.86	8.25	0.97	2.10	0.97	2.10
	2080	15.79	7.31	1.01	2.13	1.01	2.13
	2100	15.38	6.95	1.07	2.04	1.07	2.04
JKSH	2014	14.56	5.89	0.58	0.95	1.17	1.91
	2020	14.54	5.87	0.72	1.19	1.17	1.92
	2040	17.65	8.47	1.08	1.80	1.04	1.75
	2060	17.39	8.25	1.03	1.81	1.03	1.81
	2080	16.26	7.31	1.06	1.90	1.06	1.90
	2100	15.82	6.95	1.07	1.94	1.07	1.94
CHI	2014	14.20	5.89	0.15	0.31	1.09	2.20
	2020	14.18	5.87	0.31	0.63	1.09	2.22
	2040	17.14	8.47	0.71	1.52	0.96	2.09
	2060	16.89	8.25	0.92	2.28	0.92	2.28
	2080	15.82	7.31	0.92	2.49	0.92	2.49
	2100	15.40	6.95	0.93	2.54	0.93	2.54
IND	2014	14.50	5.89	0.08	0.12	1.20	1.83
	2020	14.48	5.87	0.14	0.20	1.21	1.82
	2040	17.56	8.47	0.28	0.43	1.08	1.66
	2060	17.30	8.25	0.53	0.82	1.08	1.70
	2080	16.18	7.31	0.75	1.20	1.11	1.78
	2100	15.75	6.95	0.97	1.55	1.13	1.80
RUS	2014	14.27	5.89	0.30	0.67	1.05	2.34
	2020	14.25	5.87	0.39	0.84	1.06	2.31
	2040	17.23	8.47	0.60	1.28	0.96	2.06
	2060	16.98	8.25	0.97	2.07	0.97	2.07
	2080	15.90	7.31	1.01	2.14	1.01	2.14
	2100	15.49	6.95	1.03	2.14	1.03	2.14
BRA	2014	15.05	5.89	0.23	0.36	1.15	1.85
	2020	15.03	5.87	0.38	0.61	1.16	1.84
	2040	18.36	8.47	0.79	1.26	1.03	1.67
	2060	18.08	8.25	1.03	1.72	1.03	1.72
	2080	16.87	7.31	1.07	1.79	1.07	1.79
	2100	16.41	6.95	1.09	1.81	1.09	1.81

Appendix Table 8 Continued: Foreign Tax Matching Projected Factor Prices and Marginal Products

Foreign Tax Cut Projected Factor Prices and Marginal Products							
	Year	Marginal Product of Capital	Global Interest Rate	Wage Rate		Marginal Product of Labor	
				Low Skilled	High Skilled	Low Skilled	High Skilled
GBR	2014	14.17	5.89	0.82	1.40	1.16	1.99
	2020	14.15	5.87	0.83	1.44	1.16	2.00
	2040	17.09	8.47	0.82	1.44	1.04	1.83
	2060	16.84	8.25	0.87	1.57	1.04	1.87
	2080	15.77	7.31	0.96	1.77	1.07	1.97
	2100	15.36	6.95	1.02	1.95	1.07	2.04
CAN	2014	14.13	5.89	0.69	1.22	1.15	2.03
	2020	14.11	5.87	0.81	1.41	1.16	2.02
	2040	17.03	8.47	1.08	1.89	1.04	1.83
	2060	16.79	8.25	1.05	1.86	1.05	1.86
	2080	15.73	7.31	1.09	1.90	1.09	1.90
	2100	15.32	6.95	1.11	1.91	1.11	1.91
MENA	2014	13.91	5.89	0.10	0.14	1.23	1.87
	2020	13.89	5.87	0.15	0.23	1.23	1.87
	2040	16.72	8.47	0.30	0.46	1.11	1.70
	2060	16.48	8.25	0.55	0.85	1.11	1.74
	2080	15.46	7.31	0.77	1.23	1.14	1.81
	2100	15.06	6.95	0.99	1.60	1.15	1.85
MEX	2014	13.99	5.89	0.24	0.53	1.06	2.35
	2020	13.97	5.87	0.38	0.83	1.06	2.34
	2040	16.83	8.47	0.73	1.65	0.95	2.18
	2060	16.59	8.25	0.93	2.27	0.93	2.27
	2080	15.55	7.31	0.96	2.39	0.96	2.39
	2100	15.15	6.95	0.97	2.44	0.97	2.44
SAF	2014	13.81	5.89	0.21	0.43	1.09	2.30
	2020	13.79	5.87	0.25	0.53	1.09	2.30
	2040	16.57	8.47	0.35	0.76	0.98	2.12
	2060	16.34	8.25	0.54	1.21	0.97	2.19
	2080	15.33	7.31	0.71	1.64	1.00	2.29
	2100	14.94	6.95	0.88	2.05	1.01	2.34
SAP	2014	14.18	5.89	0.11	0.23	1.09	2.21
	2020	14.16	5.87	0.28	0.57	1.08	2.23
	2040	17.10	8.47	0.69	1.52	0.95	2.13
	2060	16.85	8.25	0.93	2.23	0.93	2.23
	2080	15.79	7.31	0.95	2.36	0.95	2.36
	2100	15.38	6.95	0.96	2.40	0.96	2.40
SLA	2014	14.26	5.89	0.17	0.36	1.06	2.29
	2020	14.24	5.87	0.21	0.46	1.07	2.27
	2040	17.21	8.47	0.33	0.69	0.96	2.06
	2060	16.96	8.25	0.51	1.14	0.96	2.12
	2080	15.88	7.31	0.69	1.58	0.98	2.24
	2100	15.47	6.95	0.86	2.00	0.99	2.29

Appendix Table 8 Continued: Foreign Tax Matching Projected Factor Prices and Marginal Products

Foreign Tax Cut Projected Factor Prices and Marginal Products							
	Year	Marginal Product of Capital	Global Interest Rate	Wage Rates		Marginal Product of Labor	
				Low Skilled	High Skilled	Low Skilled	High Skilled
SOV	2014	13.91	5.89	0.12	0.24	1.10	2.24
	2020	13.89	5.87	0.17	0.34	1.10	2.24
	2040	16.72	8.47	0.29	0.60	0.99	2.05
	2060	16.48	8.25	0.50	1.09	0.98	2.13
	2080	15.46	7.31	0.68	1.57	0.99	2.28
	2100	15.06	6.95	0.86	2.05	0.99	2.37
SSA	2014	14.37	5.89	0.05	0.10	1.10	2.13
	2020	14.35	5.87	0.10	0.20	1.10	2.14
	2040	17.37	8.47	0.24	0.48	0.98	1.97
	2060	17.12	8.25	0.46	0.97	0.97	2.04
	2080	16.02	7.31	0.66	1.45	0.99	2.18
	2100	15.60	6.95	0.84	1.96	0.98	2.29
EEU	2014	13.84	5.89	0.09	0.18	1.10	2.25
	2020	13.82	5.87	0.20	0.41	1.10	2.25
	2040	16.61	8.47	0.50	1.05	0.98	2.10
	2060	16.38	8.25	0.96	2.20	0.96	2.20
	2080	15.37	7.31	0.97	2.40	0.97	2.40
	2100	14.98	6.95	1.00	2.35	1.00	2.35

Figure 5: Region-specific GDP Percentage Change above Baseline from Reforms

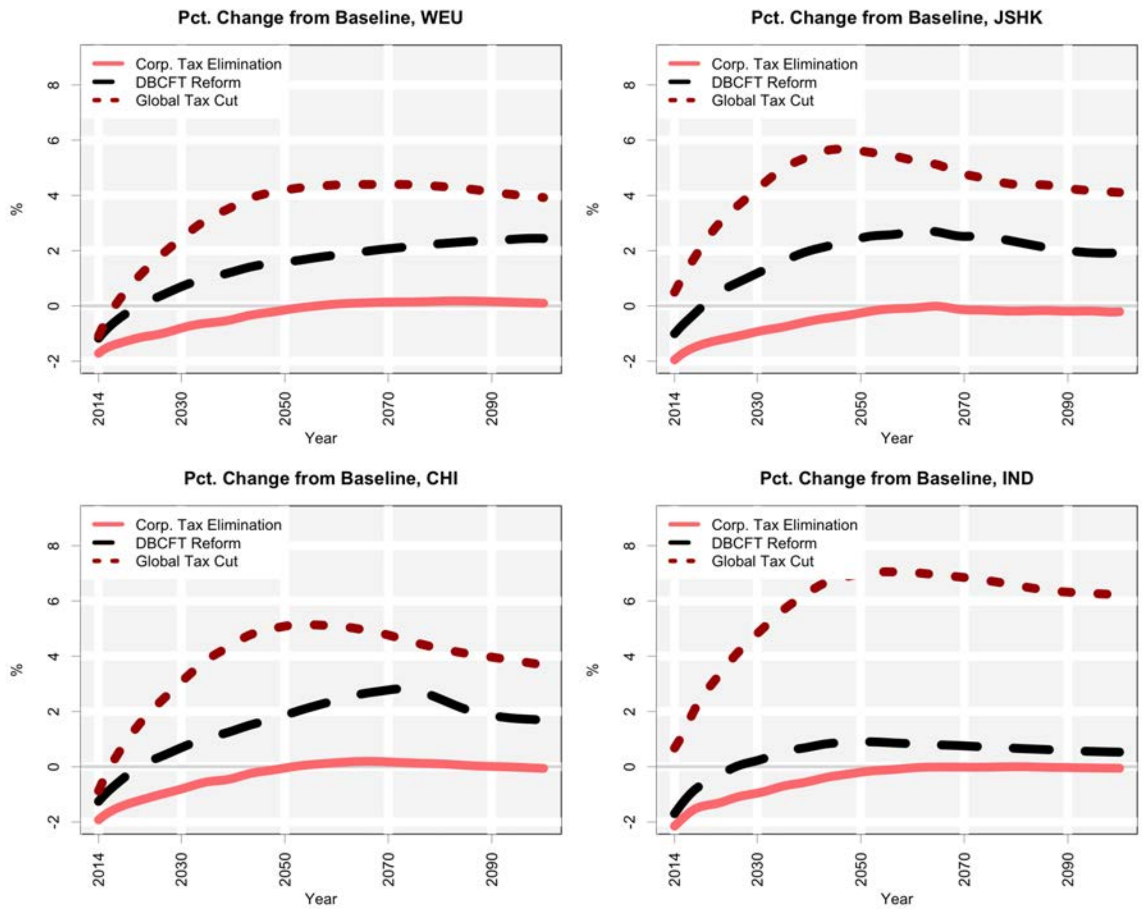

Figure 6: Region-specific GDP Percentage Change above Baseline from Reforms (Continued)

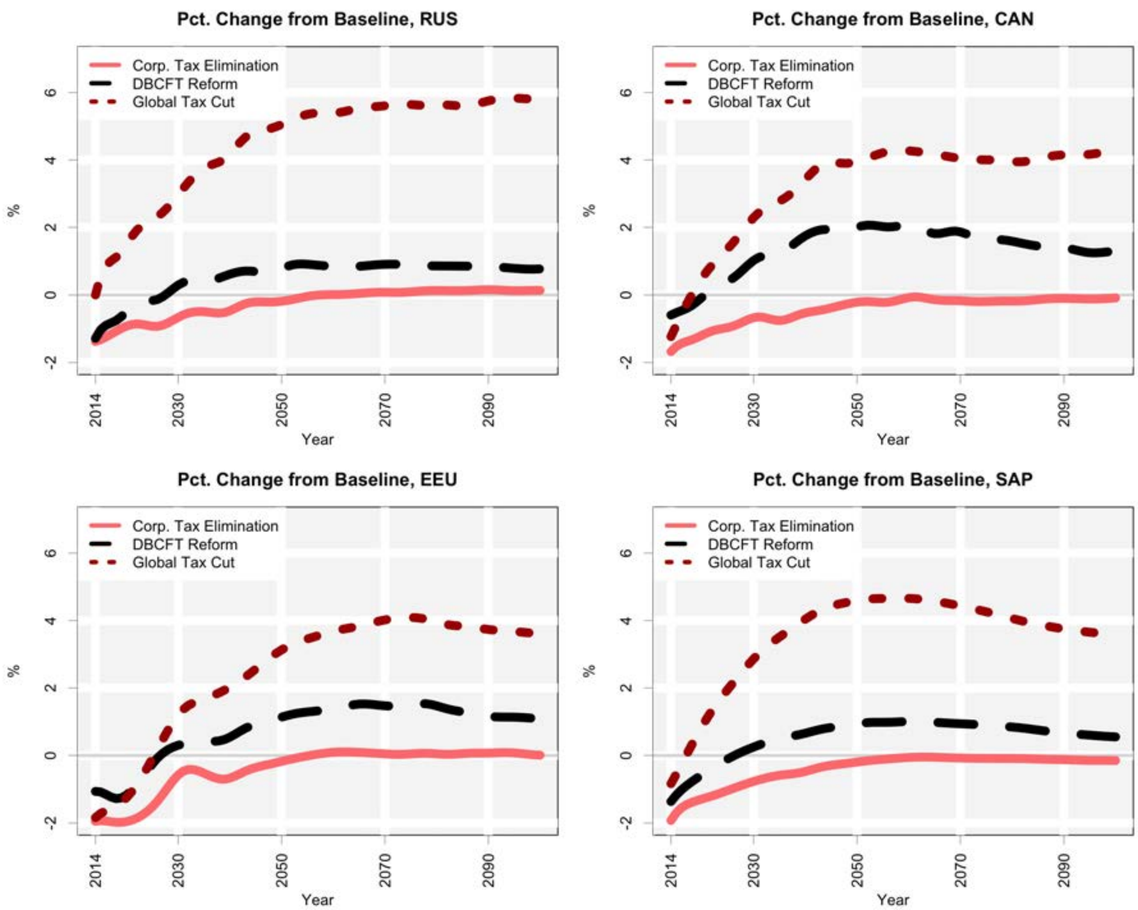

Figure 7: Region-specific GDP Percentage Change above Baseline from Reforms (Continued)

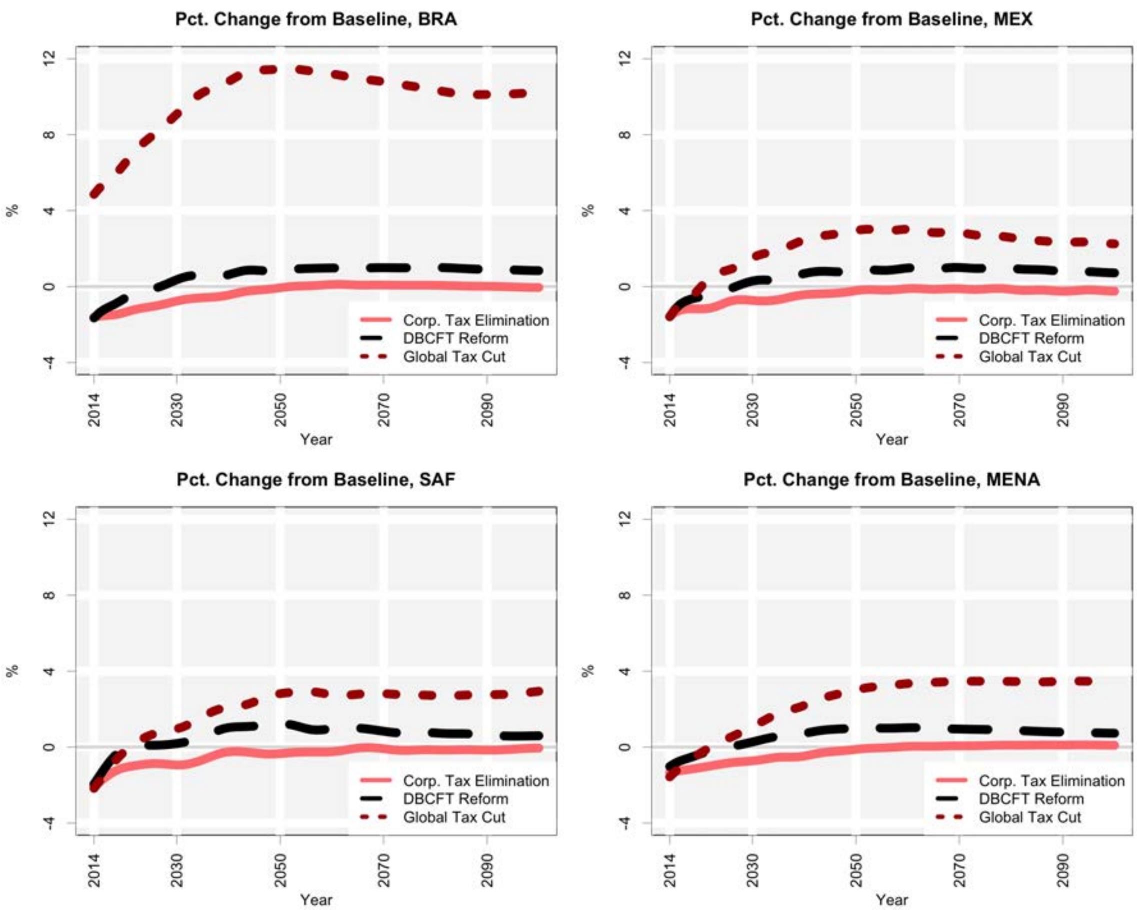

Figure 8: Region-specific GDP Percentage Change above Baseline from Reforms (Continued)

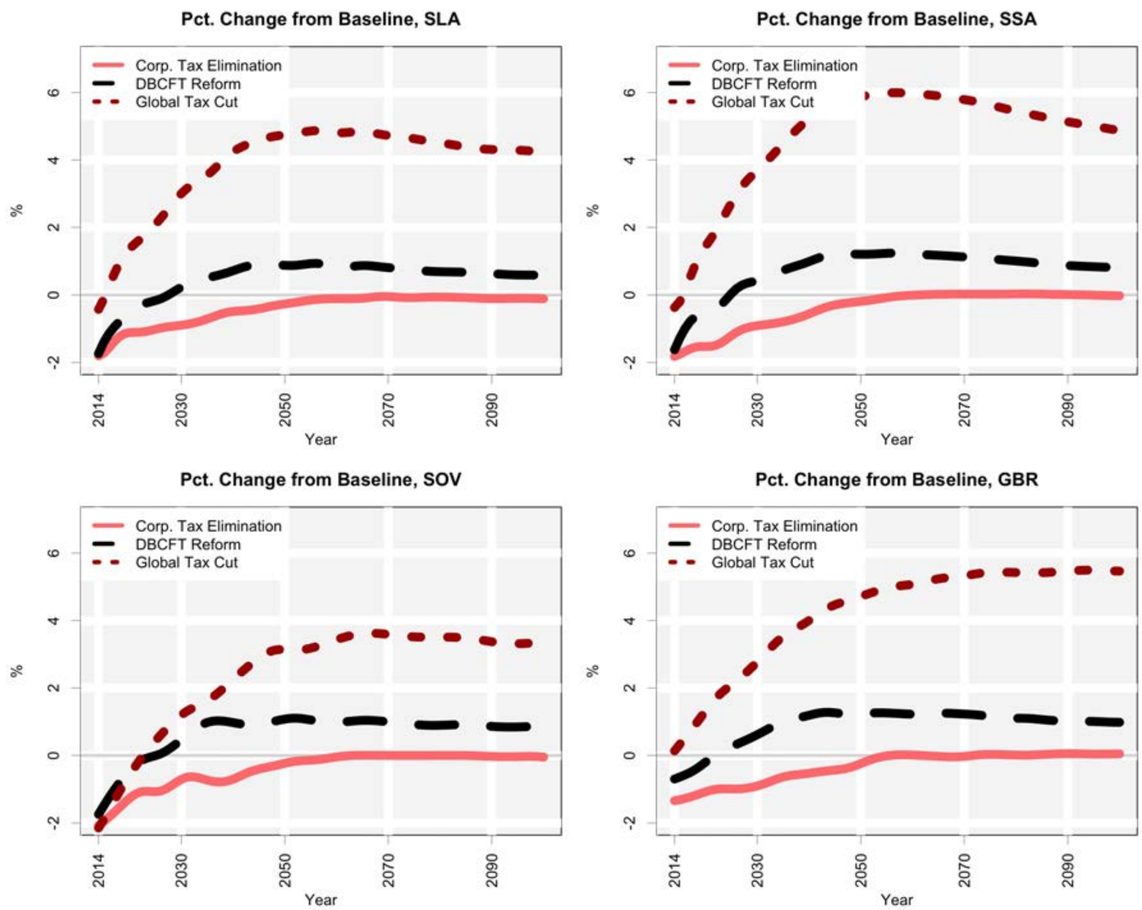

Figure 9: Region-specific High Skill Remaining Lifetime Welfare Change from Reforms

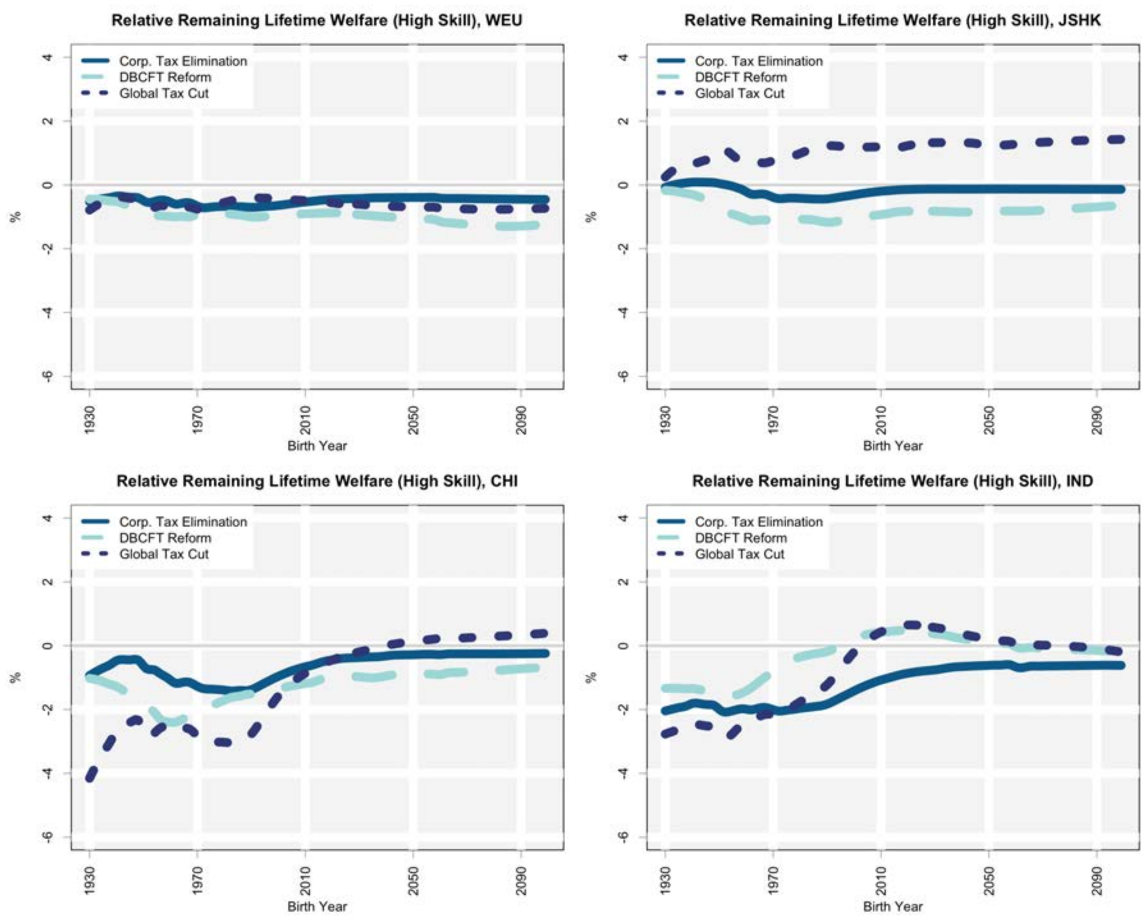

Figure 10: Region-specific High Skill Remaining Lifetime Welfare Change from Reforms (Continued)

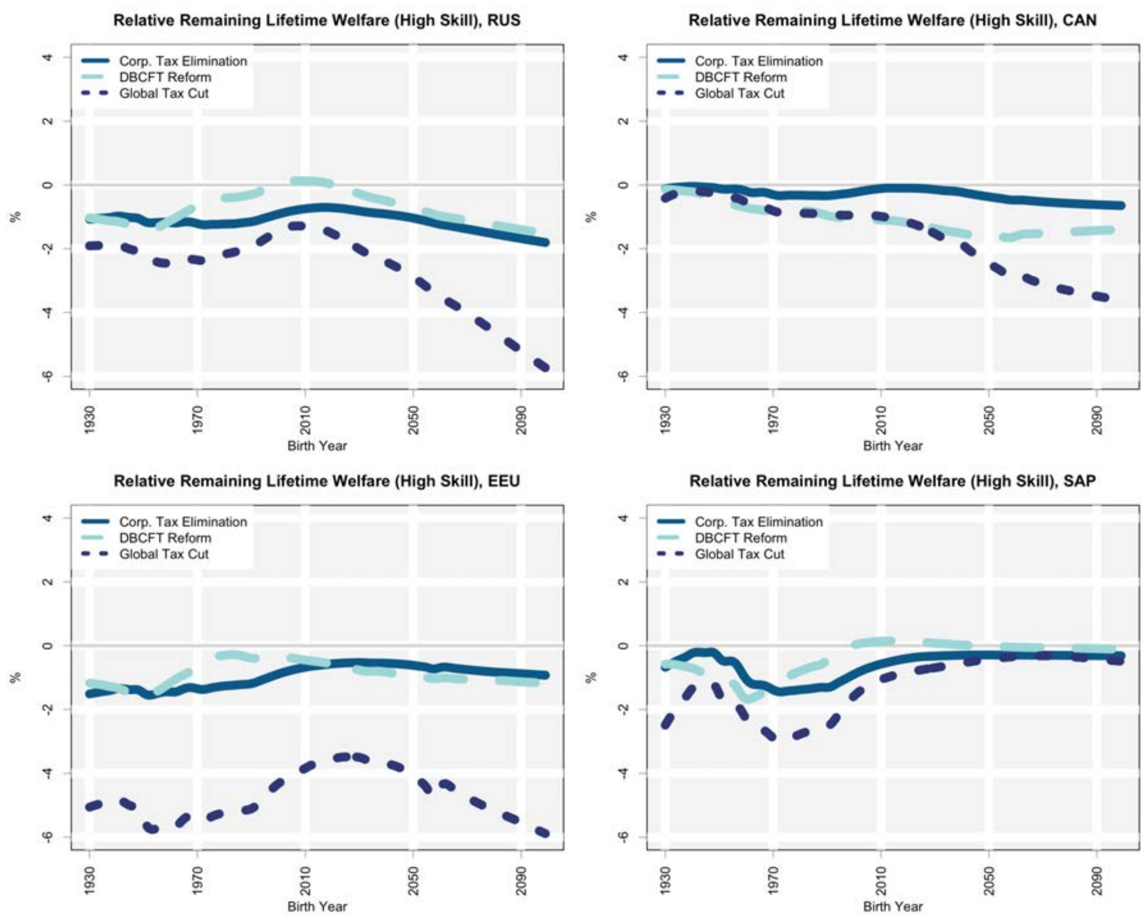

Figure 11: Region-specific High Skill Remaining Lifetime Welfare Change from Reforms (Continued)

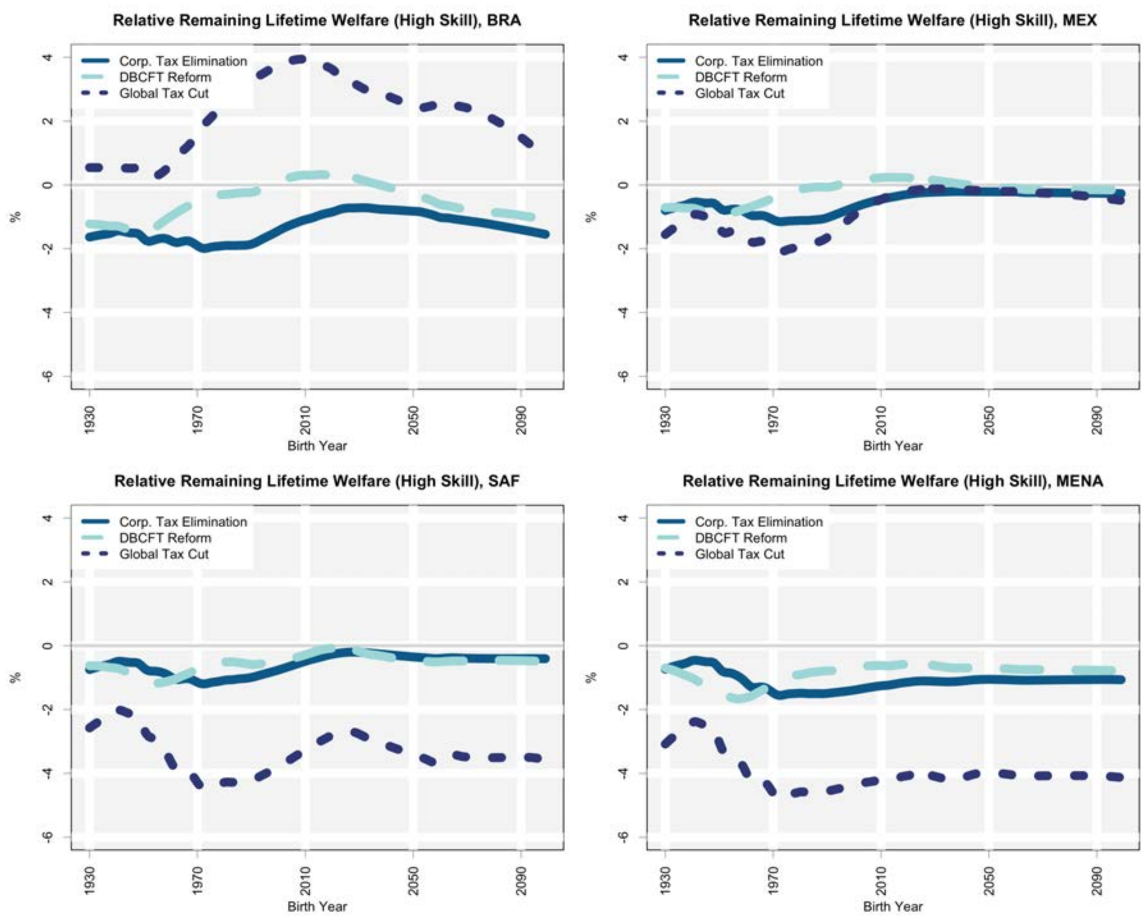

Figure 12: Region-specific High Skill Remaining Lifetime Welfare Change from Reforms (Continued)

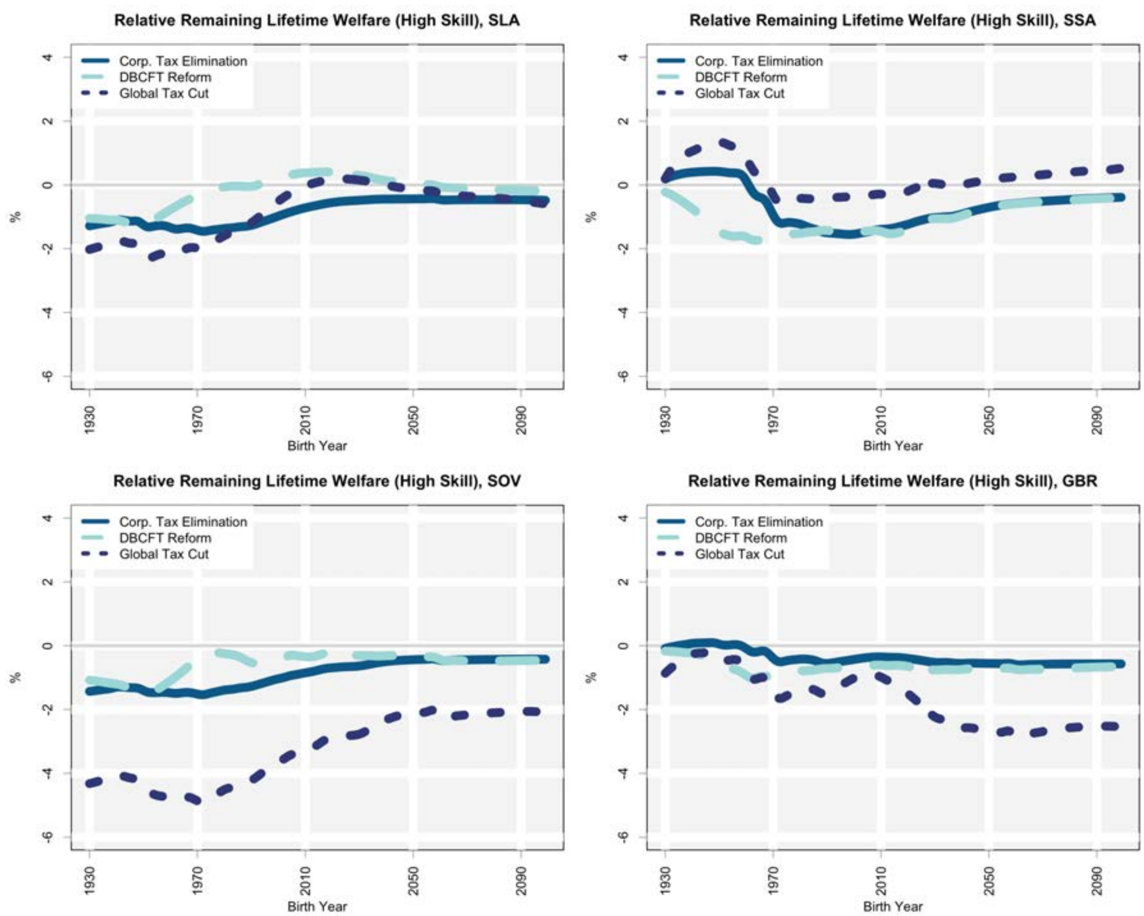

Figure 13: Region-specific Low Skill Remaining Lifetime Welfare Change from Reforms

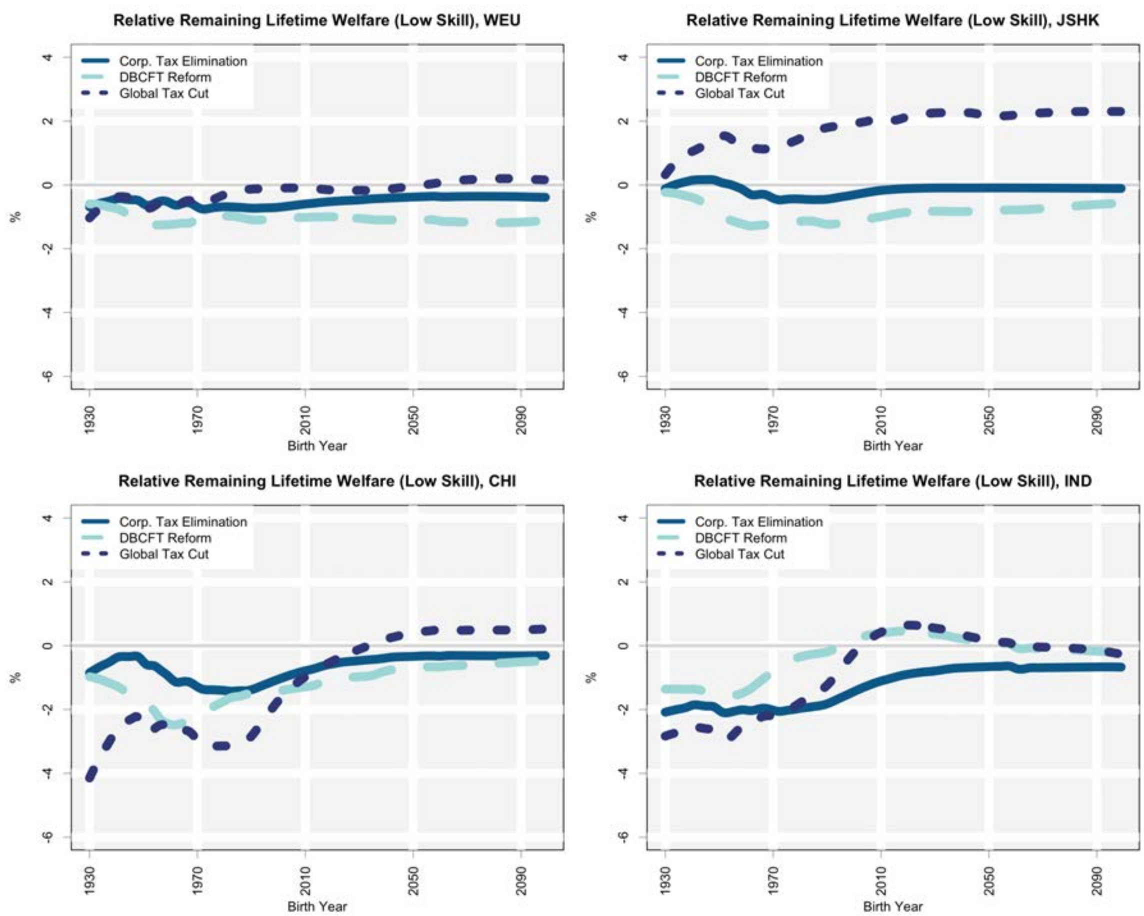

Figure 14: Region-specific Low Skill Remaining Lifetime Welfare Change from Reforms (Continued)

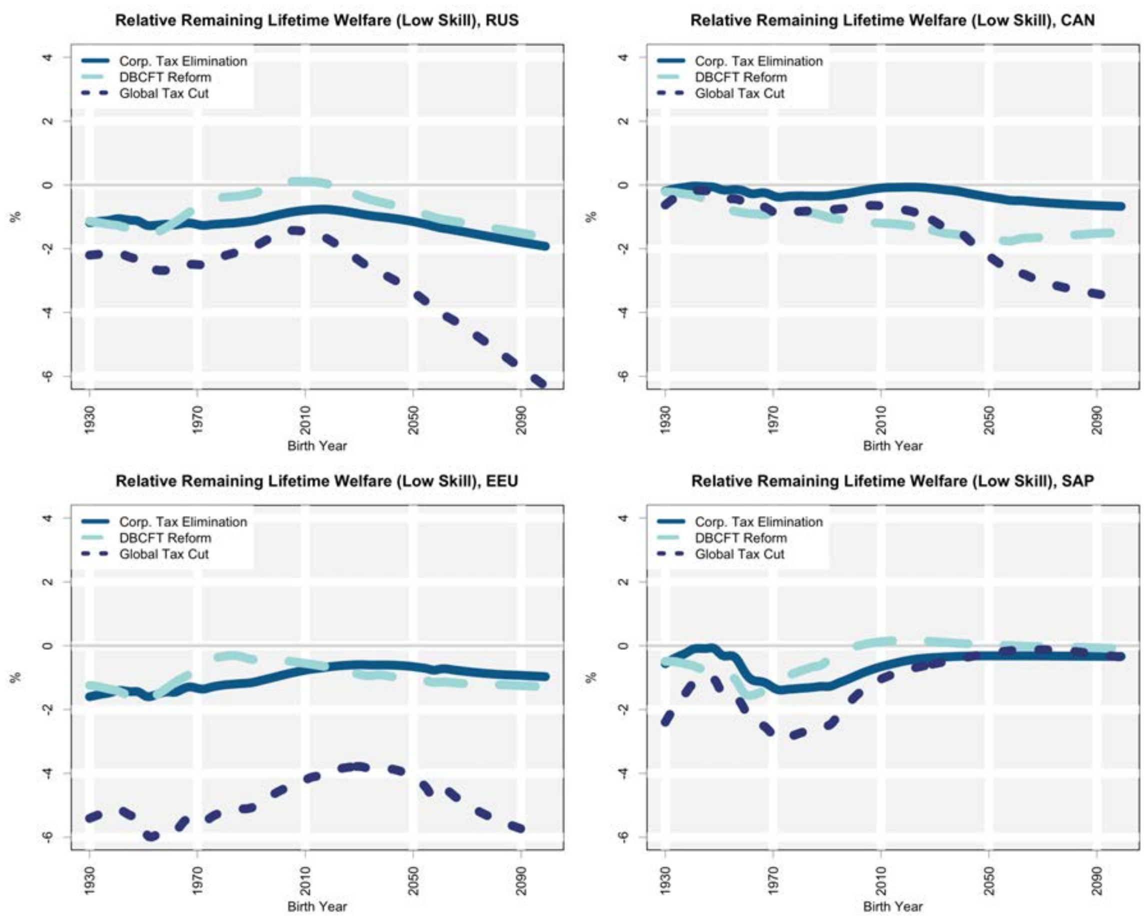

Figure 15: Region-specific Low Skill Remaining Lifetime Welfare Change from Reforms (Continued)

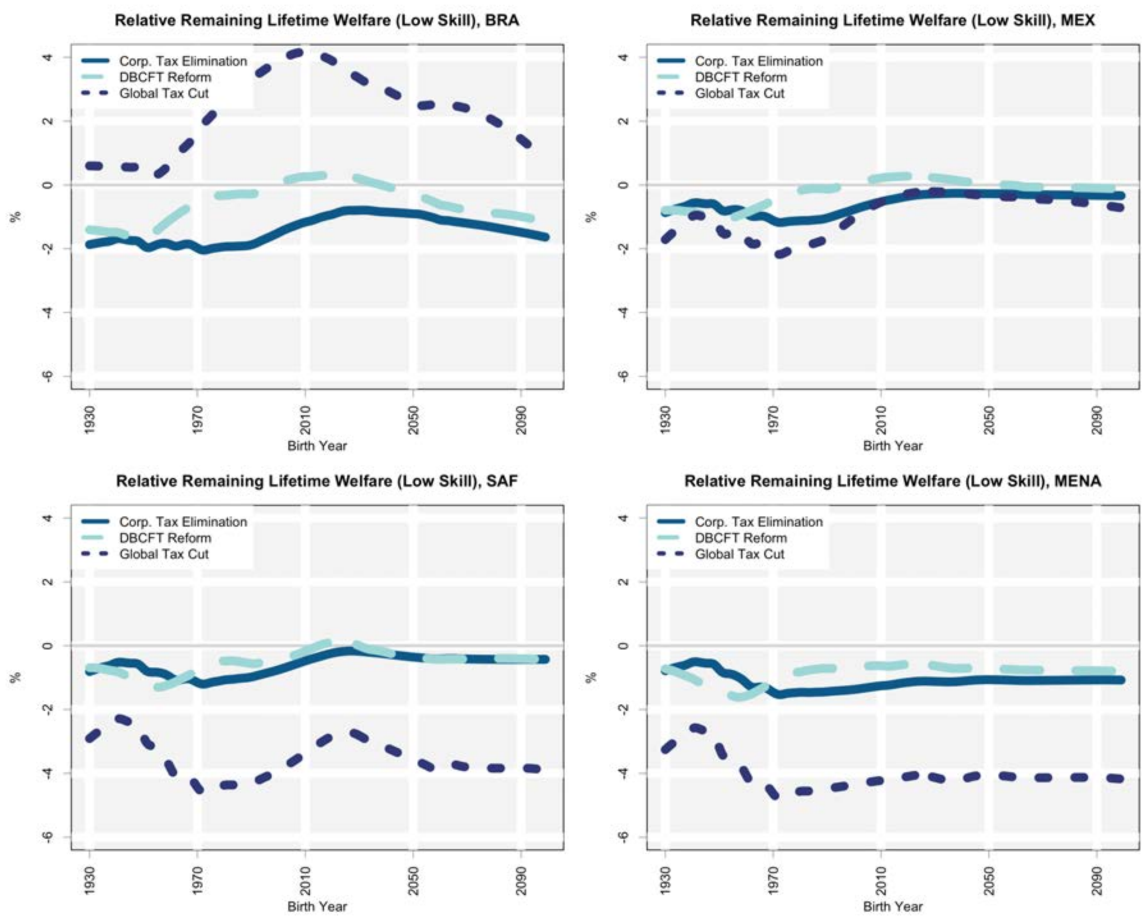

Figure 16: Region-specific Low Skill Remaining Lifetime Welfare Change from Reforms (Continued)

Appendix Table 9: Parameters Used in Simulations

	Capital Share	Low-Skilled Labor Share	High-Skilled Labor Share	Depreciation Rate	Time Preference	Elasticity of Substitution Intertemporal	Elasticity of Substitution Labor/Leisure
	α	β_l	β_h	δ_K	δ	γ	ρ
USA	0.35	0.4	0.25	0.075	-0.043	0.25	0.4
WEU	0.35	0.4	0.25	0.075	-0.079	0.25	0.4
Japan	0.35	0.4	0.25	0.075	-0.076	0.25	0.4
China	0.35	0.4	0.25	0.075	-0.044	0.25	0.4
India	0.35	0.4	0.25	0.075	0.099	0.25	0.4
Russia	0.35	0.4	0.25	0.075	0.117	0.25	0.4
BRA	0.35	0.4	0.25	0.075	0.086	0.25	0.4
GBR	0.35	0.4	0.25	0.075	0.003	0.25	0.4
CAN	0.35	0.4	0.25	0.075	-0.060	0.25	0.4
MENA	0.35	0.4	0.25	0.075	0.055	0.25	0.4
MEX	0.35	0.4	0.25	0.075	0.066	0.25	0.4
SAF	0.35	0.4	0.25	0.075	0.005	0.25	0.4
SAP	0.35	0.4	0.25	0.075	0.039	0.25	0.4
SLA	0.35	0.4	0.25	0.075	0.084	0.25	0.4
SOV	0.35	0.4	0.25	0.075	0.025	0.25	0.4
SSA	0.35	0.4	0.25	0.075	0.003	0.25	0.4
EEU	0.35	0.4	0.25	0.075	-0.027	0.25	0.4

	Leisure Preference	Labor Productivity	Technical Progress	Age of Retirement	Corporate Tax Tax Rate
	ε	ξ	λ	$\bar{a}$	τ^c
USA	1.5	1.000	0.01	66	34.6
WEU	1.5	0.310	0.01	65	25.4
Japan	1.5	0.470	0.01	61	35.5
China	1.5	0.112	0.01	60	26.0
India	1.5	0.056	0.01	60	33.9
Russia	1.5	0.270	0.01	60	27.9
BRA	1.5	0.170	0.01	65	47.3
GBR	1.5	0.700	0.01	55	25.0
CAN	1.5	0.580	0.01	65	23.9
MENA	1.5	0.068	0.01	60	17.5
MEX	1.5	0.200	0.01	65	19.7
SAF	1.5	0.180	0.01	60	14.3
SAP	1.5	0.075	0.01	58	25.3
SLA	1.5	0.150	0.01	65	27.5
SOV	1.5	0.100	0.01	62	17.5
SSA	1.5	0.035	0.01	55	30.5
EEU	1.5	0.060	0.01	65	15.1

Appendix Table 10: Summary of Data Sources

	Sources	Reported In
Demographics and Households		
Population (Including Projections)	United Nations (2016d)	Table 6, 8
Fertility	United Nations (2016a)	Table 7
Immigration	United Nations (2016b)	Tables 8, 6
Mortality	United Nations (2016c)	Tables 8, 6
Age Productivity Profile	Auerbach and Kotlikoff (1987)	Eqn. 19
Initial Regional Labor Productivity	Matches GDP as reported by International Monetary Fund (2016)	Table 5
Time Preference (δ)	Matches private consumption share of GDP as reported by International Monetary Fund (2016)	Table 4
Regional Share of Global Private Assets	Credit Swiss Global Wealth Report Credit Suisse (2017)	Table 9
Initial Age-Asset Distribution	Matches the asset age-distribution reported in the U.S. Survey of Consumer Finances (Bricker et al. (2014))	
Government Expenditure		
Retirement Age	World Bank (2016a) Reports and Trading Economics (2017)	Table 3
Gov. Transfers and Purchases by Sector	International Monetary Fund (2016), International Monetary Fund (2014), and Article IV Reports	Table 10
Health Spending Age Profile	Data constructed from the following sources: (i) Data reported by each country to the World Bank and regional development banks (ii) For the U.S., Centers for Medicare for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group; (iii) Websites of major public health service institutions, usually called 'Social Security Institutes'. When the latter, we used the age distribution of medical costs for government-sponsored beneficiaries.	
Education Expenditure Age Profile	When available, World Bank and regional development bank reports. Alternatively, government websites with country specific budgeted spending on schools, higher education, scholarship programs, and training programs. Representative country data used for some regions when data for all countries was unavailable.	
Government Revenue		
Consumption/Income Tax Ratio	International Monetary Fund (2016), International Monetary Fund (2014), and Article IV Reports	Table 10
Corporate Tax METR and Rebate	METRs from Mintz and Bazel (2017), when unavailable statutory rates from KPMG (2017)	Table 1
Share of Pension Expenditure Financed by Payroll Tax	World Bank (2016b) and IMF Article IV Reports	Table 10
Pension Replacement Rate	Matches Pension Benefits as % of GDP as reported in International Monetary Fund (2014) and World Bank (2016b)	Table 3
Pension Contribution Ceiling	OECD, Pension Commissions, and World Bank	Table 3
Interest on National Debt	International Monetary Fund (2016) and Article IV Reports	
Energy Sector		
Regional Fossil Fuel/Energy Rents	Fossil fuel rents from World Bank (2016b)	Table 9
Share of Energy Rents Owned by Gov.	Constructed based on World Bank (2016b)	Table 10

List of Countries by Region

The following is the list of countries in each region. Each region's GDP, population, and assets are the sum of constituent countries. Other macroeconomic aggregates the model is calibrated on, such as consumption share of GDP, and government fiscal policies, such as government pensions as a share of GDP, are a GDP weighted average of countries in the region. For a handful of countries, constituting a small percentage of world population and GDP, this data is incomplete or unavailable. These countries are indicated with an asterisk (*). These countries are not included in calculating the regional average.

- BRA: Brazil
- CAN: Australia, Canada, New Zealand
- CHI: China
- EEU: Belarus, Bosnia and Herzegovina, Montenegro, Republic of Moldova, Romania, Serbia, Ukraine, Albania*, Armenia*, Bulgaria*, Kosovo*
- GBR: United Kingdom
- IND: India
- JKSH: Japan, South Korea, Singapore, Hong Kong
- MENA: Afghanistan, Algeria, Egypt, Iran (Islamic Republic of), Jordan, Kuwait, Lebanon, Libya, Morocco, Qatar, Saudi Arabia, Sudan, Syrian Arab Republic, Tunisia, Turkey, United Arab Emirates, Western Sahara, Yemen, Pakistan*, Bahrain*, Ethiopia*, Iraq*, Mali*, Oman*
- MEX: Mexico
- RUS: Russian Federation
- SAF: South Africa
- SAP: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Philippines, Thailand, Timor-Leste, Viet Nam, Bangladesh, Nepal, Sri Lanka
- SLA: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia (Plurinational State of), Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Saint Vincent and the Grenadines, Sao Tome and Principe, Suriname, Trinidad and Tobago, Uruguay, Venezuela (Bolivarian Republic of)
- SOV: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Tajikistan, Turkmenistan, Uzbekistan
- SSA: Angola, Botswana, Burkina Faso, Cameroon, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Gabon, Gambia, Ghana, Kenya, Lesotho, Liberia, Madagascar, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Sudan, Swaziland, Togo, Tonga, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
- USA: United States

- WEU: Andorra, Austria, Belgium, Channel Islands, Croatia, Denmark, Estonia, Faeroe Islands, Finland, France, Germany, Greece, Iceland, Ireland, Isle of Man, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland