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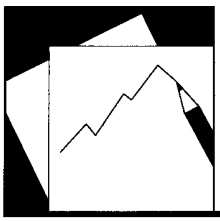

IMF Working Paper

Allocating Business Income between Capital and Labor under a Dual Income Tax: The Case of Iceland

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Allocating Business Income between Capital and Labor under a Dual Income Tax: The Case of Iceland

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Abstract

In contrast to most Scandinavian countries, Iceland allocates the income of closely held businesses (CHBs) between capital and labor based on administratively set minimum wages rather than an imputed return to book assets. This paper contrasts the relative tax burdens of the current minimum wage system with asset-based allocation methods, and finds that switching to an asset-based method could increase tax revenues from CHBs in a generally progressive manner. Predictably, the shift would also raise the tax burden of skilled labor-intensive industries more than it would that of capital-intensive industries.

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I. INTRODUCTION

The dual income tax (DIT), developed in Scandinavia during the early 1990s, combines a progressive tax on labor income with a relatively low, flat tax on all forms of capital income. It was designed to promote equity by retaining a higher progressive tax rate on labor, which is generally less mobile than capital, while still encouraging investment and forestalling the flight of increasingly mobile financial capital by subjecting capital income to a lower rate.[2] Because the DIT taxes capital income at lower rates than labor income, it can create significant tension regarding the allocation of net income between these two factors in closely held businesses (CHBs), where owners contribute both capital and labor. This problem is often described as the "Achilles Heel" of the dual income tax, although it also plagues any tax system where capital income and labor income are taxed at substantially different rates, as is often the case. The methodology for allocating CHB income between capital and labor affects the marginal income tax schedules faced by business owners, and thus their incentives to work and invest.

There are three methods of allocating net operating profits between capital and labor in closely held businesses: imputing a return to capital with the residual treated as wages; imputing a return to labor with the residual treated as capital; and an arbitrary formula such as a 50/50 split. Most Scandinavian countries (Norway, Sweden, and Finland) have adopted capital asset-based methods, which allocate capital income on the basis of an imputed return to book gross or net assets, with any residual allocated to labor. These methods have the advantage of being based on readily available measures of firm capital (book assets or equity); the imputed return to capital could be calibrated to prevailing capital market rates of return, although typically it is administratively set for longer periods. Iceland, by contrast, has adopted an allocation method based on imputing an administratively set minimum return to labor, with residual income allocated to capital. This minimum-wage based method (MWM) requires the authorities to create a schedule of minimum wages for different tax categories of business owner and adjust them annually to account for inflation, productivity changes, and other market factors affecting compensation. This method therefore requires greater administrative resources than an asset-based method, and is arguably less objective insofar as the (unobservable) skill and effort levels of CHB owners within a given wage category may vary widely. Moreover, for high-income CHB owners, allocating residual income to capital creates a regressive marginal tax rate schedule and a lower average tax burden than that faced by similar high-income employees.

In need of revenue after the 2008 financial crisis and concerned that CHB owners were extracting excessive amounts of earnings as low-taxed capital income, Icelandic authorities layered an income-splitting regime on top of the MWM: Beginning in 2010, corporate dividend payouts in excess of 20 percent of book capital were allocated 50 percent to labor

[2] Note that, because high-income individuals generally draw a larger share of income from capital, a flat-rate capital income tax is progressive, albeit not as progressive as a comprehensive income tax that taxes capital as well as labor income at a progressive rate.

and 50 percent to capital. The alternative reform of switching to an asset-based allocation method, which this paper shows would likely have raised more revenue, was not adopted. The purpose of this paper is (1) to elucidate the difference between wage-based and asset-based allocation methods; (2) to calculate the revenue impact for Iceland of moving from the former to the latter; and (3) to examine the distributional impact of this move on low- and high-income households and on businesses in different economic sectors. The following section describes the difference between wage-based and asset-based allocation methods along with the details of Iceland's income allocation regime. Section III analyzes Icelandic tax data from CHBs and calculates the revenue and distributional impact of switching from a wage-based to an asset-based regime, and Section IV concludes.

II. Capital-Based vs. Labor-Based Allocation Methods

Under a dual income tax (DIT), labor income is taxed at a relatively high, progressive personal income tax (PIT) rate, while capital income from all sources is taxed at a lower flat-rate capital income tax (KIT) rate. This method of taxation, originally developed in Denmark and spread through Scandinavia during the 1980s and 1990s, is designed to support the goals of progressive taxation and investment promotion (i.e., discouraging capital flight). Differential taxation of labor and capital income raises the question of how to allocate the income of closely held businesses (CHBs), where owners contribute both labor and capital, between those factors for tax purposes. The allocation method has implications for both horizontal and vertical equity (progressivity), as well as for form of business adoption and entrepreneurial incentives to work and invest.

In addition to an arbitrary percentage split, there are two methods for allocating CHB income between labor and capital: Under an asset-based method, a notional rate of return is imputed to either the gross assets or net assets (equity) of a business, and this income is subjected to the KIT. Any CHB net income in excess of this amount is allocated to labor and taxed at the progressive PIT rates. Most Scandinavian countries use variations of this method: Norway applies the gross assets method (GAM), while Sweden and Finland apply the net assets method (NAM). Under the NAM, after-tax income is

$$(1-\Theta)\ min[pf(K,L) - rD,\ r^*(K-D)] + (1-\tau(W))\ max[0,\ pf(K,L) - r^*(K-D) - rD] \qquad (1)$$

where τ is the average effective tax rate on labor income ($\tau' > 0$), Θ is the KIT rate, K is total capital or assets, D is debt, and $pf(K,L)$ is the production function, r is the firm-specific interest rate on debt, and r^* is the administrative return on capital used to impute taxable capital income. And under the GAM, the entrepreneur's after tax income is

$$(1-\Theta)\ min[pf(K,L) - rD,\ r^*K - rD] + (1-\tau(W))\ max[0,\ pf(K,L) - r^*K] \qquad (2)$$

The GAM is often recommended over the NAM for its greater simplicity and reduced opportunities for tax arbitrage.[3]

Alternatively, under a minimum wage-based method (MWM), income is allocated to CHB owners' labor on the basis of administratively set minimum wages, with the residual allocated to capital income. Iceland adopted this method when it introduced its dual income tax in 1997. Under the MWM, an entrepreneur's after-tax income is

$$(1-\Theta)\ max[0,\ pf(K,L) - rD - \underline{W}] + (1-\tau(W))\ min[pf(K,L) - rD\ ,\underline{W}] \qquad (3)$$

where W is labor income, $\underline{W}$ is the administratively set minimum wage.

Economic experts, as well as Scandinavian practice, tend to favor asset-based allocation methods over a minimum wage-based method.[4] The principle reasons for this are: (1) If the PIT rate is substantially lower than the CIT or KIT rates, then allocating residual income to capital will create a regressive income tax schedule for upper-income CHB owners, and create horizontal inequities with similar highly-compensated employees;
(2) capital income can arguably be measured more objectively than labor income, since capital markets provide a benchmark rate of return on capital assets, whereas labor inputs such as skill and effort are difficult to observe and quantify; and (3) imputing a return to capital consumes far fewer administrative resources than maintaining an up-to-date schedule of market-equivalent wages for various professions and sizes of business, and is likely to be less subject to political influence by particular industry groups.

To illustrate, Figures 1 and 2 show the marginal and average tax rates facing a hypothetical Icelandic CHB owner under the MWM and an asset-based method at varying levels of net CHB income. The owner is assumed to have business assets of ISK 25 million (US$217,000), no debt, and an imputed minimum wage of ISK 6 million (US$52,000). The capital imputation rate is 15 percent, and 2010 tax rates apply: CIT and KIT are both 20 percent, and the PIT rate progresses from 37.3 percent to 46.2 percent with a threshold of ISK 1.4 million (US$12,000).[5] All corporate profits not allocated to labor income are assumed to be retained under the MWM; with full distribution, the marginal tax rate on capital distributions would rise from 20 percent to 36 percent.

[3] See Cnossen (1997) and Sorenson (2007). The NAM provides an incentive to move non-business interest expense (for example, for residential mortgages or consumer debt) into the business in order to increase deductions from labor income without changing the asset base; similarly, it also creates an incentive to shift financial assets (e.g., securities) out of and back into a business within the tax year to reduce net interest income. Thin capitalization rules are needed to guard against these practices

[4] Cnossen (1997), Sorensen (2007).

[5] Iceland's 8.65 percent social security contribution, which would apply to the minimum wage, is excluded.

Figure 1. Marginal Tax Rates for GAM and MWM

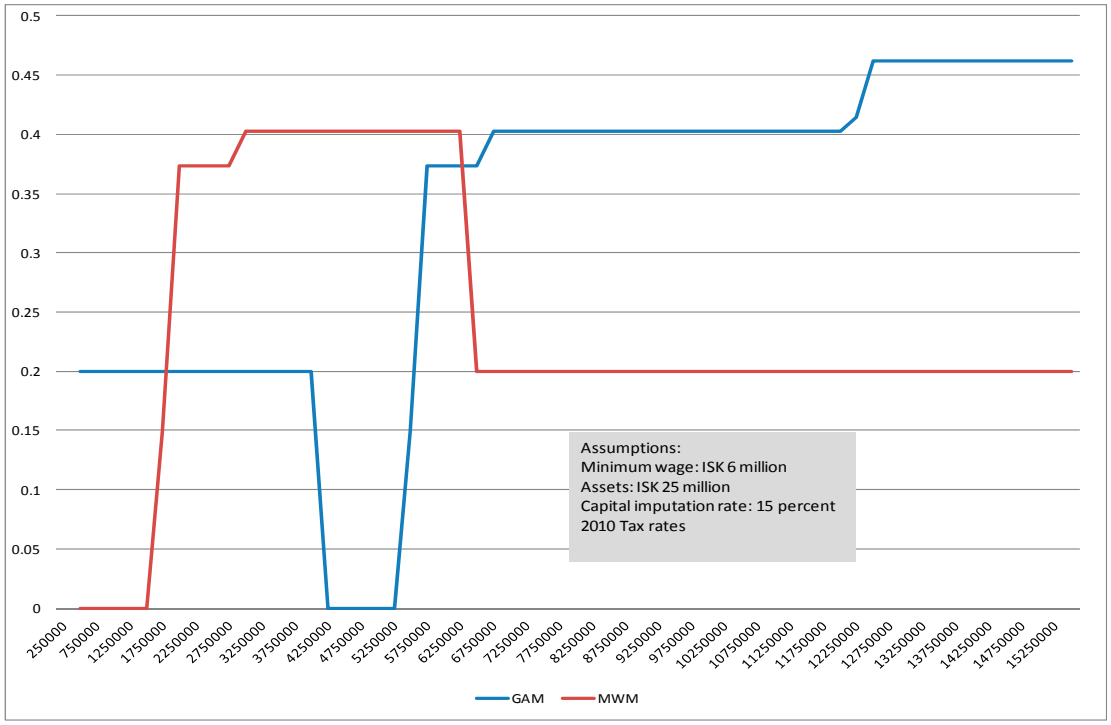
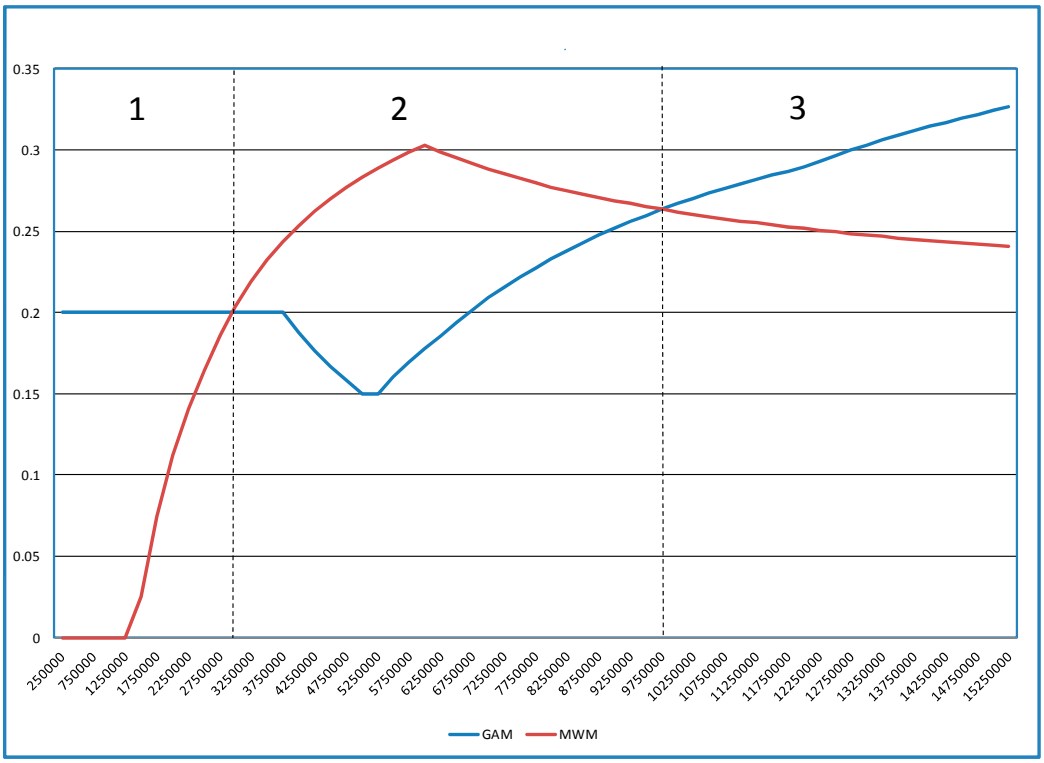


Figure 2. Average Tax Rates for GAM and MWM



As can be seen, the general tax regime under an asset-based method is more progressive than under the MWM (Figure 2). Although the MWM is quite progressive for lower-income business owners, who benefit from the initial tax-exempt allowance of the PIT on their first ISK 1.4 million of CHB income, the average tax rate begins to decline for income levels above the MWM minimum wage. By contrast, the asset-based method is less progressive for low-income owners, who pay the capital tax on their first ISK 3.75 million of income (given their assets and the capital imputation rate); beyond this, their average tax rate drops as the PIT regime kicks in before rising again with higher levels of income. CHB owners with more than ISK 9.75 million in income pay less tax under the MWM than under the GAM. One the whole, low-income and high-income business owners should prefer the MWM, while moderate-income owners are better off under the asset-based method.

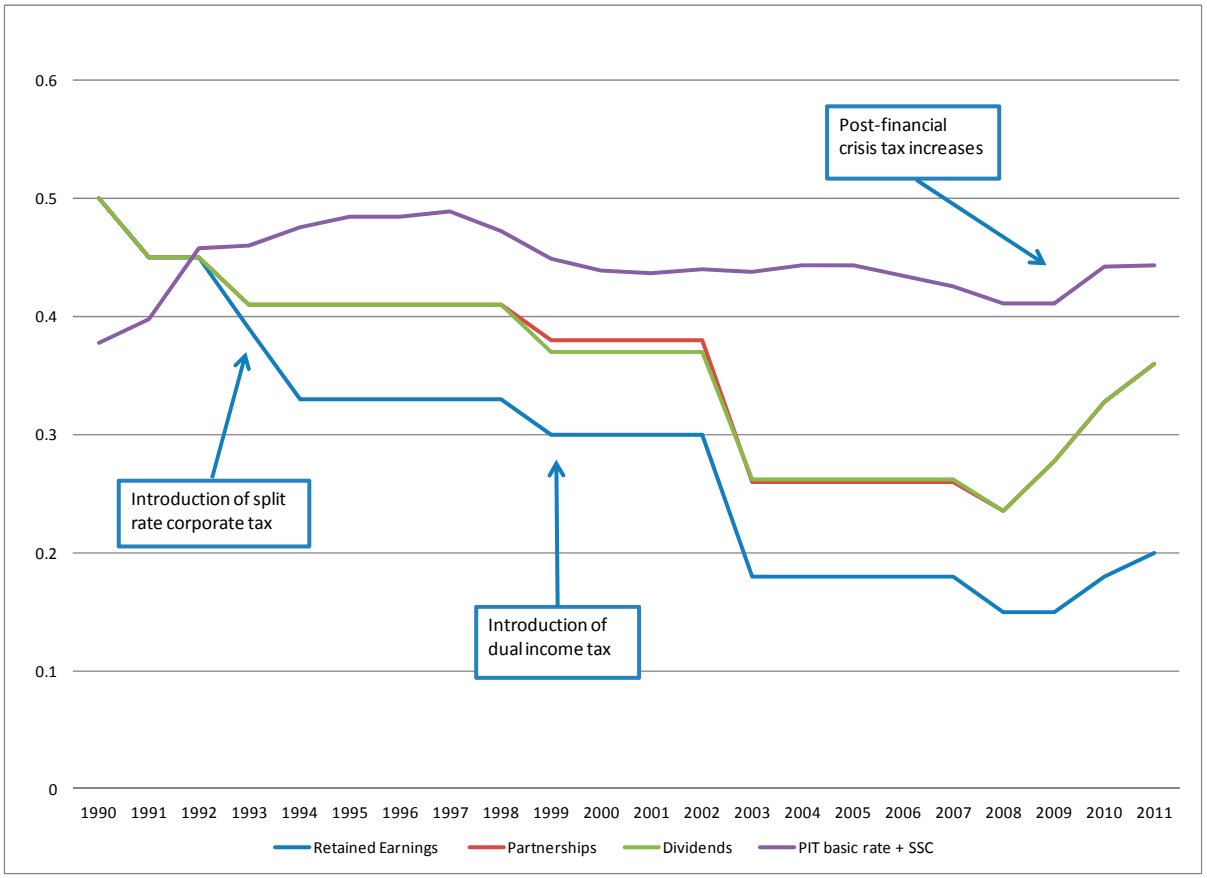
The marginal tax rate schedules in Figure 1 also imply different incentives for entrepreneurs at different income levels under the MWM and asset-based methods. Overall, it could be argued that the MWM is less likely to deter investment and effort by higher-income business owners, who face the lower capital income tax rate on additional income, whether generated by capital or labor. Because a business owner's minimum wage is essentially fixed for a certain range of income and type of activity, it should not distort investment decisions at the margin; however, owners may face some disincentive to grow as they approach a threshold that would increase their minimum wage (See Section III). Conversely, CHB owners under asset-based methods may in some cases have an incentive to overinvest in order to increase their allocation to lower-taxed capital income. Formal modeling of entrepreneurial incentives for work and investment under a dual income tax is worth further exploration but beyond the scope of this paper.

The MWM also creates significant inequities between salaried and self-employed workers with respect to social security contributions (SSCs, which are not incorporated into Figures 1 and 2). In Iceland, wages are subject to an 8.65 percent social security contribution (SSC), plus a minimum contribution of 12 percent to private, compulsory pension schemes. There is no floor or cap on the salary amount for these contributions. However, the self-employed in all forms of CHB (sole proprietorships, partnerships, and corporations) are subject to SSCs only on the statutory minimum wage, even if their full income is taxed under the PIT, as is the case for sole proprietorships. Thus the SSC base for the self-employed is effectively capped, unlike the base for salaried workers, which taxes salaried workers more heavily and necessitates a higher contribution rate to raise a given level of revenue.

There are several other significant variations in the income splitting regimes among the Scandinavian countries. Most Scandinavian DITs provide for corporate integration – recipients of corporate dividends receive a credit for CIT paid on the underlying earnings against their KIT liability, so that the final tax rate on corporate distributions is the same as for non-corporate capital income. Iceland, however, operates a classical system of corporate taxation, where distributions are subject to both the CIT and the KIT. Nonetheless, the compound CIT and KIT rate has been substantially below the PIT rate since introduction of the DIT (Figure 3). To prevent arbitrage between corporate distributions and partnership income, Iceland therefore sets the partnership income rate equal to the compound tax rate on

corporate distributions.[6] However, unlike partners, corporate owners have the advantage of being able to defer KIT liability by retaining earnings within the corporation. Similar to corporate integration for dividends, Sweden gives CHB owners the advantage of paying only the capital (or corporate) tax rate on all earnings until they are distributed, at which time income allocated to the PIT receives a credit for KIT or CIT paid ("fence" model). Norway, Finland and Iceland, however, tax income allocated to labor at the full PIT rate in the current year ("source" model).

Figure 3. Evolution of Income Tax Rates, Iceland 1990–2010



[6] For example, in 2008 the CIT rate was 15 percent and the KIT rate was 10 percent, so the partnership tax rate was 23.5% = 15%+10%*(1-15%).

III. Iceland's Dual Income Tax

A. The Minimum Wage Allocation Method

Iceland's economy is characterized by a high rate of incorporation (Figure 4). In 2010, there were a total of 33,545 corporations, or more than one for every 10 inhabitants. This number rose from less than 10,000 in 1993 due to a series of tax and legal changes, beginning with the reduction in the early 1990s of corporate and partnership tax rates below personal income tax rates and the introduction in 1993 of a split corporate tax rate lowering the rate on retained earnings relative to the tax rate on distributed dividends (Figure 3). In 1994, legislation providing for private limited corporations, which are subject to standard corporate tax law but less restrictive company laws, was passed. The introduction of the dual income tax in 1997, with a classical CIT at 33 percent and an (implied) capital income tax of 13.4 percent, continued the trend of taxing retained earnings more lightly than distributions. By contrast, in 1997 sole props were subject to a PIT rate of 48.9 percent (including social security charges), with a 5 percent PIT surcharge on incomes above ISK 2.8 million. Thus corporate owners enjoyed the option to retain earnings at significantly lower marginal tax rate than they would experience as partners or sole proprietors.[7] Accordingly, the late 1990s began a trend toward rapid expansion of the number of private corporations and contraction in the number of sole proprietorships. In 2002, a sharp cut in the CIT rate from 30 percent to 18 percent, while the PIT remained fairly constant, accelerated the incorporation of sole proprietorships.

Owners of all three types of business—closely held corporations, partnerships, and sole proprietorships—are subject to minimum wage requirements on their earnings. Depending on the size and sector of their business, they must pay themselves a certain minimum amount as wages, which is subject to the PIT as well as social security taxes.[8] The level of these minimum wages relative to the actual value of the CHB owner's labor, or the wage that s/he would receive in a competitive labor market, is therefore of interest. Since labor income is taxed more heavily than capital income under a DIT, imputing low levels of labor income to CHB owners will often give them a tax advantage over salaried employees. This will in turn create an incentive for individuals to market their labor as independent consultants rather than employees, provided they are able to contribute the minimum amount of capital to incorporate or form a partnership.[9]

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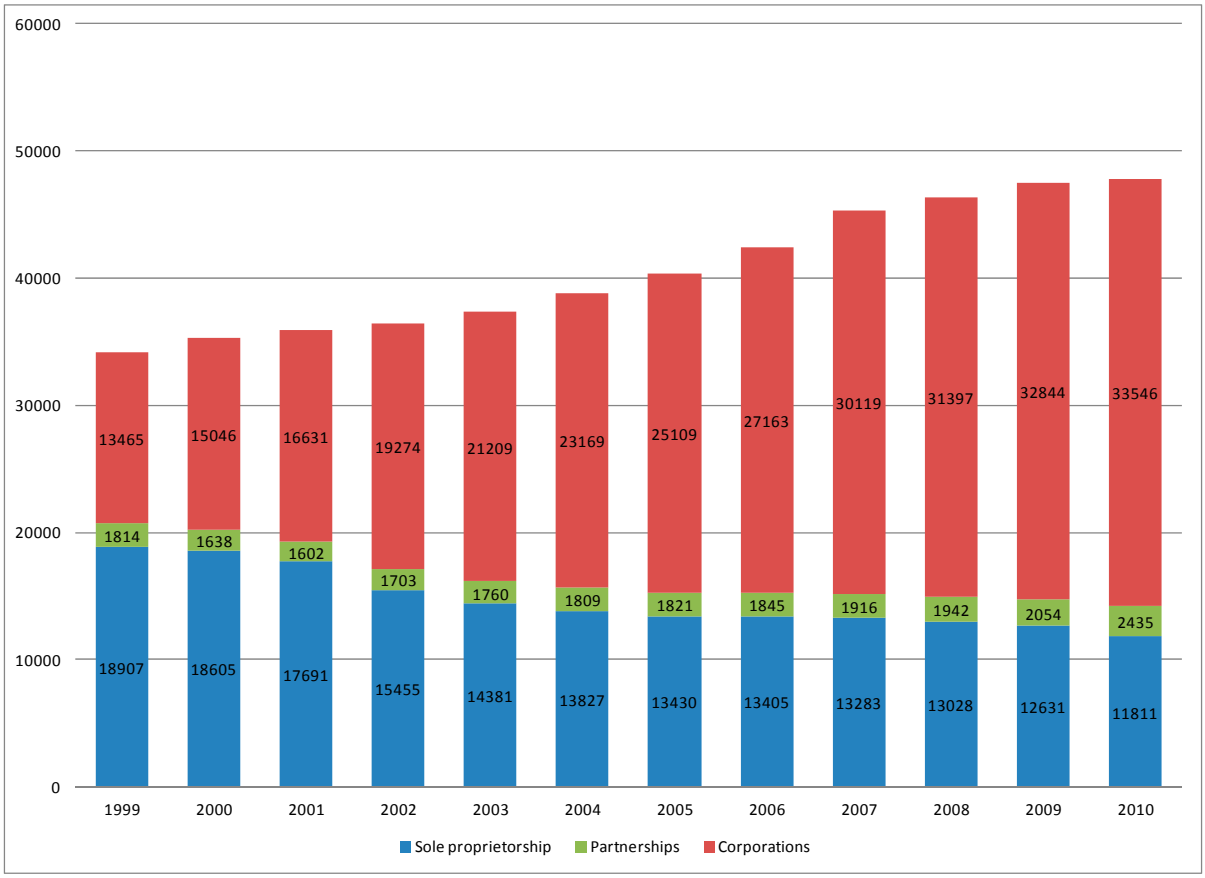
[7] Prior to 1993, the tax rate on retained earnings, distributed dividends, and partnership earnings was identical. Since then, however, the rate on retained earnings has been lower.

[8] Income in excess of this amount is taxed either under the PIT for sole proprietorships (but not subject to social security), to the partnership tax, or to CIT and the dividend tax, if distributed.

[9] In 2010, the minimum share capital for a public limited company was ISK 4.000.000 (approx. US$35,000) and for a private limited company ISK 500.000 (US$4,500).

Figure 4. Number of Businesses by Type, Iceland 1999–2010



Assessing the relationship between statutory minimum wages and arm's-length wages would require detailed compensation analysis that is beyond the scope of this study. However, Icelandic tax authorities acknowledge that statutory minimum wages can in some cases be very low. For example, in 2010 specialists, such as doctors and lawyers, who supervised 15 workers (category "A1") would have reported an annual minimum wage of ISK 8.7 million (Table 1); this is equal to about US$72,500, likely substantially less than they would have earned as a salaried employee at a large firm or hospital.

Taking initial minimum wage levels as given, it is fairly straightforward to evaluate their evolution through time, although changes in categorization and unobserved productivity gains complicate this analysis as well. Statutory minimum wages must be reset every year by the tax administration to prevent their erosion by inflation, which in Iceland averaged 8.3 percent per year during 2000–10; ideally, the wage should also be adjusted to reflect changes in sector-specific labor productivity that would translate into higher salaries.

For years 2000–05, little can be inferred about the evolution of real minimum wages for CHB owners in a particular business (other than craftsmen) due to shifts in the categorization of owners within each sector (Table 1). For example, in the "general activities" category, the number of sub-categories rose from two to five during the period, so the wage increases for the "B1" category may partially represent inflation or productivity gains, but partially also

the separating out of owners in smaller businesses with fewer employees, to whom a lower minimum wage is attributed. For craftsmen, however, for whom there were no changes in categorization, real minimum wages rose 35 percent during 2000–05. By comparison, real GDP grew 23 percent over this period and real wages (nominal wage index/CPI) grew 12 percent, suggesting that the portion of craftsmen's income allocated to labor for tax purposes may have increased significantly relative to actual labor output.

Table 1. Evolution of Statutory Minimum Wages for CHBs in Iceland, 2000–10

	2000−05	2005−07	2000−10
CPI	23%	12%	33%
Nominal Wages	38%	19%	18%
Real Wages	12%	7%	-11%
Real GDP	23%	11%	-9%
Sample Minimum Wage Categories			
Specialist services (A1)			
Nominal	58%	15%	0%
Real	29%	2%	-25%
General activities, industry, commerce, fishing and services (B1)			
Nominal	59%	15%	0%
Real	30%	2%	-25%
Mass communication, artists, entertainers, publishers, specialist sales or services (C1)			
Nominal	157%	15%	0%
Real	110%	2%	-25%
Craftsmen (D1)			
Nominal	65%	15%	0%
Real	35%	2%	-25%
Assorted individual operations, non-authorized work and mechanical operators (E1)			
Nominal	110%	14%	0%
Real	72%	2%	-25%
Fishing (F1)			
Nominal	61%	14%	0%
Real	31%	2%	-25%
Agriculture (G1)			
Nominal	37%	15%	0%
Real	12%	2%	-25%
Spouse and children (H1)			
Nominal	45%	14%	0%
Real	19%	2%	-25%

Source: IFS database; and Rikisskattsjori.

From 2005 forward, the minimum wage categories were fixed, allowing more meaningful inference about the evolution of real minimum wages in the second half of the decade. Between 2005 and 2007, nominal minimum wages were raised 14–15 percent, and real minimum wages rose by 2 percent. From 2007 through 2010, however, the tax authorities did not raise minimum wages at all due to the financial crisis, resulting in a 25 percent erosion of their real value. By comparison, real GDP fell by 9 percent and real market wages by 11 percent over that period.

The high rate of incorporation resulting from Iceland's more than 10-point spread between capital and labor tax rates and low minimum wages has arguably led to a substantial amount of labor income's being taxed advantageously as capital income. Data collected from taxpayer returns reporting wages and dividends received from the same corporation show that, while 70 percent of the taxpayers in this category earn predominantly wages, about 16 percent of the taxpayers earn at least 70 percent dividends, and the top two percent earn more than 90 percent dividends (Table 2). Moreover, for the entire group, dividends equaled 700 percent of paid-in capital in 2009. Paid-in capital is not an accurate reflection of corporate book assets because it does not include retained earnings. Nonetheless, these figures suggest that a large portion of the corporate income extracted as dividends is actually generated by labor. For example, if two-thirds of all distributed income—the benchmark share of labor income in the economy as a whole—received by corporate owner/employees in 2009 had been wages, an additional ISK 11.5 billion in dividends would have been reallocated from capital to labor.

Table 2. CHB Wages and Dividends 2000–09

Year	Number of Households	Ratio CHB Divs/Wages
2000	1,998	25%
2001	2,140	28%
2002	2,875	24%
2003	2,397	37%
2004	4,547	37%
2005	6,338	46%
2006	6,967	58%
2007	7,251	60%
2008	6,035	70%
2009	5,970	83%

Source: RSK; and authors' calculations.

B. The 20/50 Allocation Method

The ratio of CHB dividends to wage income rose from only 25 percent in 2000 to 83 percent in 2009 (Table 3). This shift resulted from several factors: profitability rose during the boom years of the mid-decade, and then in 2007 the minimum wage freeze reduced the required allocation to labor. Recognizing the over-allocation of CHB income to capital under the

MWM and wanting to raise revenue to address its fiscal crisis in a progressive manner, Iceland's government altered the tax treatment of CHB income beginning in 2010. Under the "20/50" method, the minimum wage allocation system is maintained, but in addition dividend payouts that exceed 20 percent of corporate net assets (equity) are allocated 50 percent to capital and 50 percent to labor.[10] In 2009, though profits were generally low, anticipation of the introduction of the 20/50 regime also boosted CHB dividend payouts.

Table 3. Simulation of Shift from MWM to 20/50 Method for Tax Years 2000–09

Year	Number of Households	Change in PIT	Change in CIT	Change in KIT	Total Tax Change/CHB Distributions
2000	1,998	281	-147	-34	1.2%
2001	2,140	329	-193	-45	0.9%
2002	2,875	435	-208	-49	1.4%
2003	2,397	491	-170	-78	2.1%
2004	4,547	923	-351	-160	1.8%
2005	6,338	1,402	-604	-275	1.5%
2006	6,967	1,888	-965	-440	1.1%
2007	7,251	2,116	-1,118	-509	1.0%
2008	6,035	2,279	-1,014	-575	1.5%
2009	5,970	4,126	-1,241	-1,055	3.9%

Source: RSK; and authors' calculations.

Other revenue-raising measures of the post-crisis government narrowed the tax wedge between labor and capital relative to pre-crisis levels. Both the CIT and the capital income tax rates were increased in stages to 20 percent, indicating a total dividend and partnership tax rate of 36 percent vs. the 2008 rate of 23.5 percent.[11] Labor income rates were also increased: the basic PIT rate was raised from 35.7 percent to 37.3 percent, and two higher brackets of 2.9 and 6 percent were imposed. SSC charges were also raised from 5.34 percent to 8.65 percent. Overall, the rate differential between the total dividend tax rate and the basic PIT rate plus SSC charges narrowed by more than 7 percentage points to just under 10 percent. Nonetheless, capital income is still taxed advantageously relative to labor income for income above the basic PIT allowance of ISK 1.4 million (US$12,200).

The impact of the 20/50 method on a CHB owner's marginal tax rate schedule is shown in Figure 5.[12] Prior to the introduction of 20/50, a CHB owner wishing to pay out 100 percent of

[10] After changes in the tax law in mid-2011, the 50 percent allocation to labor is no longer subject to social security charges, nor is it deductible from the CIT base. As before this change, it is of course subject to the PIT along with any other earned income of the CHB owner. The calculations in this paper use the 2010 method of calculating the effects of the 20/50 split.

[11] A net wealth tax, which had been abolished in 2006, was also reintroduced.

[12] Figure 5 assumes net capital of ISK 25 million and a minimum wage of ISK 6 million.

his/her company's earnings faced the same marginal tax rates as a partnership owner; if some portion of earnings were retained in the corporation, however, his/her tax burden was lower. The 20/50 method increases the corporate tax burden above that of the partnership for distributions in excess of 20 percent of CHB equity, though maintaining tax rates below those faced by a sole proprietorship. Many corporations with high dividend payouts thus responded the 20/50 rule by converting into partnerships, producing an 18.5 percent jump in the number of partnerships in 2010 (Figure 6).

Figure 5. MTRs for Different Forms of Business

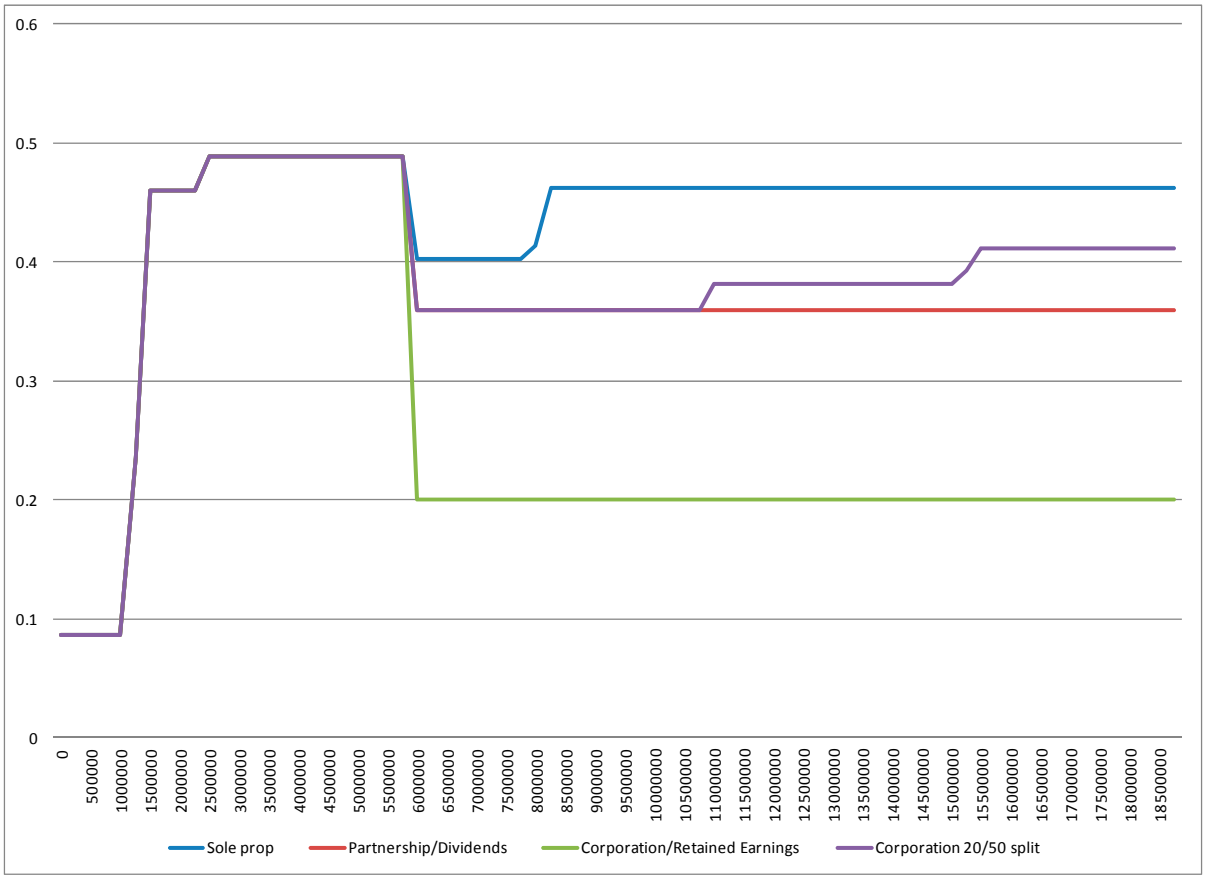
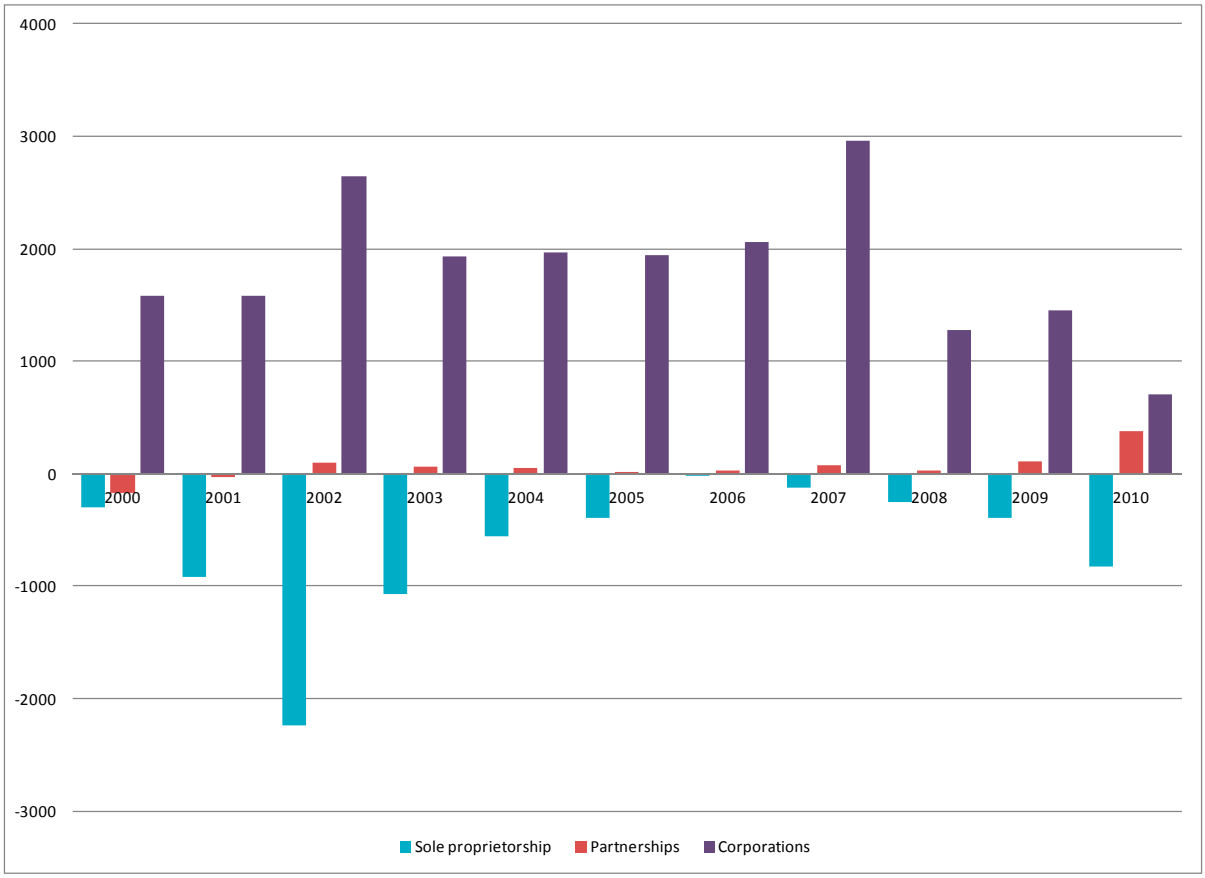


Figure 6. Change in Numbers of Businesses by Type, Iceland 2000–10



The revenue impact of applying the 20/50 rule for the years 2000–09 is simulated in Table 3. The dataset used for the analysis comprises personal income tax return data matched with data from corporate ownership declaration forms disclosing ownership shares, dividends and wages paid to owners, as well as with data from corporate income tax returns. CHB owners are defined as individuals who own more than 5 percent of a private corporation's stock and receive at least ISK 800,000 (about US$6,700) in wages from that company. For each taxpayer, 50 percent of dividends in excess of 20 percent of corporate equity were reallocated from dividends to labor income and taxed accordingly.[13] The net increase in taxes ranged from 1–4 percent of total distributions to controlling shareholders (grossed up dividends plus wages).

C. Asset-Based Allocation Methods: NAM and GAM

This section analyzes the effect on PIT and CIT revenues of shifting from the MWM to the GAM or NAM of income allocation between labor and capital. Annual total changes in PIT and CIT revenue are calculated for each method for the years 2000–09; then, data for 2009

[13] Since this paper applies the 2010 splitting method, the increase in wages was assumed to be deducted from the CIT base. No behavioral adjustments were made to dividend payouts.

are broken down by PIT income bracket (as measured under GAM or NAM) as well as by industrial sector in order to gauge the effect of the policy changes on different segments of the economy. For each model, two different imputed rates of return to capital were used: a "risk-free" rate of 7 percent, roughly equivalent to the current rate on government bonds, and 15 percent, which allows a substantial equity risk premium. In practice, DIT countries usually offer substantial risk premia when imputing capital income: Norway imputes income at 4 percentage points above the five-year government bond rate, Sweden at 5 percentage points above the 10-year government bond rate,[14] and Finland at 20 percent (or 10 percent, at the taxpayer's request, to benefit low-income businesses).[15]

In order to prevent double-counting in the sectoral breakdown, the sample was further limited to CHB owners who received at least 50 percent of their total PIT income from a CHB. This reduced the sample by approximately 1,000 observations. The number of taxpayers in the NAM sample is somewhat higher (5,078 vs. 5,026) due to a later extraction date from the RSK database.

Total CHB income for both the GAM and the NAM was calculated as current-year owner's wages plus the owner's share of net income (profits less interest expense).[16] Losses were not carried forward between tax years. For the GAM, capital income was calculated as the lesser of (1) the owner's share of total CHB income or (2) the imputed return to capital (owner's share of assets times the capital imputation rate) minus the owner's share of interest expense. Any residual income was allocated to labor. Under the NAM, capital income was calculated as the lesser of (1) total CHB income or (2) the imputed return to equity (owner's share of net equity times the capital imputation rate); any residual income was allocated to labor.

Changes in the PIT and CIT revenues are shown in the third and fourth column of each table. Their ratio to total CHB income (capital and labor income before taxes) is shown in the sixth column. This would be the total change in tax revenue from the shift to an asset-based method, if there were no change in dividend payouts from the MWM regime. Of course, the decline in the allocation of CHB income to capital which occurs in most observations would likely result in lower dividend payouts, which would reduce KIT revenue and the overall revenue gain. Projecting dividend payouts under an asset-based method would require behavioral modeling beyond the scope of this preliminary study. Instead, the far right column of each table shows the change in revenue that would result if CHB dividend payouts fell to zero. Thus, the sixth and seventh columns can be read as upper and lower bounds on the revenue change from switching to an asset-based method of income allocation.

[14] These rates applied as of 2005: Eggert and Genser (2005).

[15] International Bulletin for Fiscal Documentation database, 2011.

[16] The owner's share of net income was calculated as the owner's equity share times corporate net income, and similarly for the owner's share of interest expense and assets.

As expected, adopting the GAM or NAM generally increases wage income and lowers capital income in any given year (Tables 4 and 5), thereby generating an increase in tax revenues due to the higher progressive PIT rates. There are, however, two exceptions to this: In 2000 and 2001, the GAM lowers wage income and increases capital income relative to the MWM. This can result if there is a predominance of CHB owners extracting much of their CHB income in wages under the MWM, as Table 3 shows is the case in the early part of the decade. Even in 2000 and 2001, however, the NAM increases PIT income. Indeed, comparison of the annual GAM and NAM reallocations shows that the NAM reallocates more income to wages in each year than the GAM for both the 7 percent and 15 percent imputation rates. This indicates that both imputation rates are, on average, higher than the actual interest rates paid by CHBs. Accordingly, the NAM raises more net revenue from the PIT and CIT than the GAM in all years. As would be expected, the 7 percent imputation rate raises more net revenue that the 15 percent rate for both the GAM and the NAM, since it subjects more CHB income to the progressive PIT.

Table 4. GAM Annual Totals 2000–09

Year	No. CHB Owners	Change in PIT	Change in CIT	Tax Change/ CHB Income	100% KIT Loss
7 Percent Imputed Return to Capital					
2000	1875	856	-447	4.7%	3.1%
2001	1979	870	-448	4.2%	2.4%
2002	2640	2,488	-1,487	5.7%	4.5%
2003	2203	1,857	-688	8.1%	6.3%
2004	4099	7,251	-2,955	10.8%	9.6%
2005	5681	13,571	-5,995	11.4%	10.1%
2006	6254	14,699	-7,029	10.1%	8.3%
2007	6416	21,314	-10,558	10.5%	9.0%
2008	5269	6,150	-2,409	8.4%	4.9%
2009	5026	9,091	-2,735	13.7%	8.2%
15 Percent Imputed Return to Capital					
2000	1875	-47	226	2.1%	0.4%
2001	1979	-155	302	1.5%	-0.4%
2002	2640	453	-35	2.4%	1.2%
2003	2203	385	-30	2.5%	0.6%
2004	4099	2,737	-963	4.5%	3.2%
2005	5681	7,146	-2,997	6.3%	4.9%
2006	6254	6,919	-3,149	5.0%	3.2%
2007	6416	11,702	-5,627	6.0%	4.4%
2008	5269	3,753	-1,369	5.4%	1.9%
2009	5026	4,900	-1,256	7.9%	2.4%

Source: RSK; and authors' calculations.

Table 5. NAM Annual Totals 2000–09

Year	No. CHB Owners	Change in PIT	Change in CIT	Tax Change/ CHB Income	100% KIT Loss
7 Percent Capital Imputation Rate					
2000	1879	980	-530	5.0%	3.4%
2001	1982	1,081	-585	4.9%	3.1%
2002	2645	3,151	-1,933	6.9%	5.8%
2003	2212	2,192	-832	9.4%	7.6%
2004	4117	8,722	-3,589	12.9%	11.7%
2005	5719	15,544	-6,902	13.0%	11.6%
2006	6290	14,942	-7,156	10.2%	8.4%
2007	6455	22,437	-11,134	11.0%	9.5%
2008	5323	6,340	-2,491	8.6%	5.1%
2009	5078	10,057	-3,063	14.9%	9.4%
15 Percent Capital Imputation Rate					
2000	1,879	504	-191	3.5%	1.9%
2001	1,982	469	-155	3.1%	1.3%
2002	2,645	2,177	-1,260	5.2%	4.1%
2003	2,212	1,390	-485	6.3%	4.4%
2004	4,117	6,556	-2,649	9.8%	8.6%
2005	5,719	12,431	-5,472	10.4%	9.1%
2006	6,290	10,879	-5,144	7.5%	5.7%
2007	6,455	17,438	-8,597	8.6%	7.1%
2008	5,323	4,787	-1,822	6.6%	3.1%
2009	5,078	8,106	-2,380	12.2%	6.7%

Source: RSK; and authors' calculations.

Breaking down the impact of the GAM and NAM by level of total PIT income[17] (Tables 6 and 7) shows that both methods reduce net PIT and CIT liabilities for lower-wage CHB owners and increase it for those with higher wages. The progressivity of this pattern is greater for the 7 percent imputation rate than for the 15 percent rate, and greater for the NAM than for the GAM. Taxpayers with less than ISK 3 million (US$25,000) in total PIT income experience a fall in their wage income as well as their total tax liabilities under all scenarios, while taxpayers with at least ISK 10 million (US$83,500) in PIT income experience a rise in their wage income and a net tax increase of at least 14 percent of total CHB income (capital plus wages). PIT income in Tables 6 and 7 is measured after the application of the GAM or NAM, so there is some circularity in these findings. A breakdown by total income—capital as well as labor—would be preferable; however, this was not possible because the Icelandic

[17] This includes non-CHB PIT income, which in the GAM and NAM samples accounts for about 5 percent of total PIT income.

tax database stores data at the individual level yet allocates all capital income received by married taxpayers to the higher-earning taxpayer. Economy-wide, labor income accounted for about 70 percent of total individual income (PIT plus KIT) in 2009.

Table 6. GAM Income Distribution 2009

GAM PIT Income (ISK mns)	No. CHB Owners	Change in PIT	Change in CIT	Tax Change/ CHB Income	100% KIT Loss
7 Percent Imputed Return to Capital					
<1	415	-313	201	-22.9%	-48.6%
1-2	411	-157	68	-10.5%	-24.8%
2-3	529	-35	19	-1.1%	-5.5%
3-4	581	49	-13	1.6%	-2.6%
4-5	539	164	-54	4.5%	0.1%
5-6	392	232	-71	7.3%	3.1%
6-7	353	276	-80	8.2%	4.2%
7-8	311	359	-105	10.5%	6.5%
8-9	229	313	-90	10.9%	6.8%
9-10	175	301	-88	12.2%	5.9%
>10	1091	7,902	-2,523	19.2%	13.6%
Total	5026	9,091	-2,735	13.7%	8.2%
15 Percent Imputed Return to Capital					
<1	704	-583	368	-8.5%	-19.9%
1-2	516	-255	110	-8.9%	-19.3%
2-3	626	-114	53	-2.5%	-6.3%
3-4	595	-14	15	0.0%	-3.8%
4-5	486	81	-21	2.3%	-2.1%
5-6	406	168	-44	4.5%	0.8%
6-7	311	214	-58	5.8%	1.9%
7-8	270	258	-70	7.2%	2.4%
8-9	154	194	-53	7.3%	3.3%
9-10	145	222	-68	9.1%	2.8%
>10	813	4,728	-1,486	14.5%	8.8%
Total	5,026	4,900	-1,256	7.9%	2.4%

Source: RSK; and authors' calculations.

Table 7. NAM Income Distribution 2009

NAM PIT Income (ISK mns)	No. CHB Owners	Change in PIT	Change in CIT	Tax Change/ CHB Income	100% KIT Loss
7 Percent Capital Imputation Rate					
<1	383	-286	185	-30.8%	-67.4%
1-2	401	-135	59	-10.5%	-23.1%
2-3	536	-31	17	-1.0%	-4.7%
3-4	585	75	-24	2.4%	-0.7%
4-5	556	176	-57	4.7%	-0.5%
5-6	403	231	-69	7.2%	2.4%
6-7	350	300	-89	9.1%	4.9%
7-8	288	306	-88	9.9%	5.7%
8-9	247	360	-106	11.8%	7.8%
9-10	181	316	-93	12.8%	7.7%
>10	1148	8,744	-2,798	20.4%	14.8%
Total	5078	10,057	-3,063	14.9%	9.4%
15 Percent Capital Imputation Rate					
<1	499	-379	246	-12.0%	-29.2%
1-2	473	-202	86	-10.6%	-20.3%
2-3	555	-48	25	-1.4%	-5.7%
3-4	599	44	-11	1.3%	-1.1%
4-5	532	150	-48	4.0%	-0.7%
5-6	413	213	-61	6.0%	1.8%
6-7	311	232	-65	7.2%	2.9%
7-8	309	321	-92	8.9%	4.8%
8-9	218	304	-87	10.7%	6.2%
9-10	160	288	-86	12.2%	6.6%
>10	1009	7,183	-2,288	18.2%	12.6%
Total	5078	8,106	-2,380	12.2%	6.7%

Source: RSK; and authors' calculations.

Tables 8–11 decompose the impact of GAM and NAM by economic sector, which varies considerably. For the NAM regime with a 15 percent imputation rate, for example, the change in net PIT and CIT liability as a percentage of total CHB income ranges from as little as 4.1 percent for the water and waste and mining sectors to as much as 16.9 percent for arts and entertainment. Certain sectors face a higher than average increase in tax liabilities for all rates and methods: Health and social work, arts and entertainment, administrative and support services, and transportation and storage. In the GAM models, two other human capital-intensive sectors—finance and insurance and professional, scientific and technical services—also appear as sectors with an above-average tax increase. This accords with the expectation that sectors with fewer capital assets and more value added from skilled labor are

likely to be hardest hit by a shift from a minimum wage-based allocation method to an assets-based method.

On the opposite side of the spectrum, construction, real estate and mining are always among the four sectors with the lowest increase in tax liabilities. Here, the large share of capital inputs appears to limit the increase in wage income from shifting to an asset-based allocation method. However, two additional sectors with substantial capital inputs, agriculture and fishing and manufacturing, nonetheless experience an above-average increase in tax liability in all but the 15 percent GAM scenario.

Table 8. GAM 7 Percent Sectoral Distribution 2009

Sector	No. CHB Owners	Change in PIT	Change in CIT	Tax Change/ CHB Income	100% KIT Loss
Agriculture, forestry and fishing	288	576	-164	16.1%	12.9%
Mining	4	9	-3	10.8%	3.7%
Manufacturing	586	1,589	-486	15.1%	11.6%
Water and waste	10	38	-12	10.8%	6.7%
Construction	1042	842	-227	10.0%	2.0%
Wholesale and retail trade	854	1,682	-520	13.5%	7.7%
Transportation and storage	168	446	-142	17.9%	14.6%
Accommodation and catering	173	271	-87	14.3%	11.9%
Information and communication	278	403	-116	12.2%	6.9%
Finance and insurance	74	317	-97	16.6%	8.7%
Real estate	74	92	-25	11.1%	-1.5%
Professional, scientific and technical	793	1,591	-471	13.5%	7.7%
Administrative and support services	141	252	-79	15.4%	11.0%
Education	62	65	-19	11.3%	8.7%
Health and social work	275	672	-208	15.4%	8.8%
Arts, entertainment and recreation	73	168	-55	18.2%	8.1%
Other services	129	77	-25	9.1%	5.4%
Unspecified	2	1	0	6.8%	6.8%
Total	5026	9,091	-2,735	13.7%	8.2%

Source: RSK; and authors' calculations.

Table 9. GAM 15 Percent Sectoral Distribution 2009

Sector	No. CHB Owners	Change in PIT	Change in CIT	Tax Change/ CHB Income	100% KIT Loss
Agriculture, forestry and fishing	288	271	-56	8.4%	5.2%
Mining	4	1	0	1.8%	-5.2%
Manufacturing	586	565	-129	6.0%	2.5%
Water and waste	10	-7	3	-1.4%	-5.6%
Construction	1042	320	-33	4.6%	-3.3%
Wholesale and retail trade	854	828	-218	7.1%	1.3%
Transportation and storage	168	296	-89	12.2%	8.8%
Accommodation and catering	173	173	-51	9.4%	7.0%
Information and communication	278	267	-69	8.4%	3.1%
Finance and insurance	74	123	-32	6.9%	-0.9%
Real estate	74	14	4	3.0%	-9.6%
Professional, scientific and technical	793	1,132	-312	9.9%	4.1%
Administrative and support services	141	173	-50	11.0%	6.6%
Education	62	39	-10	7.0%	4.4%
Health and social work	275	536	-162	12.4%	5.8%
Arts, entertainment and recreation	73	127	-41	13.9%	3.8%
Other services	129	42	-12	5.3%	1.6%
Unspecified	2	0	0	1.8%	1.8%
Total	5026	4,900	-1,256	7.9%	2.4%

Source: RSK; and authors' calculations.

Table 10. NAM 7 Percent Sectoral Distribution 2009

Industry	No. CHB Owners	Change in PIT	Change in CIT	Tax Change/ CHB Income	100% KIT Loss
Agriculture, forestry and fishing	289	622	-181	17.3%	14.0%
Mining	4	10	-3	12.4%	5.4%
Manufacturing	589	1,826	-566	17.1%	13.7%
Water and waste	10	49	-16	13.9%	9.8%
Construction	1,056	943	-260	10.9%	3.1%
Wholesale and retail trade	858	2,042	-641	15.5%	9.9%
Transportation and storage	175	465	-148	18.3%	14.9%
Accommodation and catering	174	271	-87	14.2%	11.8%
Information and communication	279	432	-126	13.0%	7.7%
Finance and insurance	75	276	-85	14.4%	6.6%
Real estate	75	105	-30	12.3%	-0.3%
Professional, scientific and technical	800	1,728	-516	14.5%	8.8%
Administrative and support services	141	261	-82	15.9%	11.6%
Education	62	69	-21	11.8%	9.3%
Health and social work	284	700	-217	15.6%	9.1%
Arts, entertainment and recreation	75	179	-59	19.2%	9.2%
Other services	130	78	-25	9.2%	5.5%
Unspecified	2	1	0	5.0%	5.0%
Total	5,078	10,057	-3,063	14.9%	9.4%

Source: RSK; and authors' calculations.

Table 11. NAM 15 Percent Sectoral Distribution 2009

Sector	No. CHB Owners	Change in PIT	Change in CIT	Tax Change/ CHB Income	100% KIT Loss
Agriculture, forestry, and fishing	289	458	-123	13.1%	9.9%
Mining	4	3	-1	4.1%	-2.9%
Manufacturing	589	1,523	-460	14.5%	11.0%
Water and waste	10	13	-4	4.1%	0.0%
Construction	1056	698	-170	8.5%	0.6%
Wholesale and retail trade	858	1,557	-474	12.0%	6.4%
Transportation and storage	175	400	-125	15.8%	12.5%
Accommodation and catering	174	233	-74	12.3%	9.9%
Information and communication	279	360	-101	11.0%	5.7%
Finance and insurance	75	168	-47	9.1%	1.3%
Real estate	75	58	-13	7.4%	-5.2%
Professional, scientific, and technical	800	1,512	-442	12.8%	7.1%
Administrative and support services	141	225	-69	13.9%	9.6%
Education	62	55	-16	9.6%	7.0%
Health and social work	284	619	-189	13.9%	7.3%
Arts, entertainment, and recreation	75	157	-51	16.9%	6.9%
Other services	130	64	-20	7.6%	3.9%
Unspecified	2	0	0	1.8%	1.8%
Total	5078	8,106	-2,380	12.2%	6.7%

Source: RSK; and authors' calculations.

IV. Conclusions and Areas for Further Research

This paper analyzes the impact of shifting from a minimum wage-based method of allocating income between labor and capital in closely held businesses to an asset-based method, using Icelandic income tax data for the years 2000–09. It demonstrates that either the GAM or the NAM with 7 percent or 15 percent capital income imputation rates could raise substantial PIT and CIT revenue from CHBs. The NAM raises somewhat more revenue, indicating that the imputation rates are higher than actual CHB borrowing rates. In most years, this increase in revenues resulted from a net reallocation of income from capital to labor, subjecting it to the higher progressive PIT rates.

However, in 2000 and 2001, when CHB dividend distributions were still modest relative to CHB wages, the GAM with a 15 percent imputation rate resulted in a higher allocation to capital income than the MWM, although net PIT and CIT revenues still rose, indicating that a substantial share of the reallocated wage income had been subject to the generous PIT exemption under the MWM. Concern for the impact of a high-rate asset-based method on very small businesses with significant capital assets suggests consideration of an optional lower-rate regime for small CHBs similar to Finland’s.

Both asset-based methods, especially the NAM, appear to be "progressive" insofar as they lower tax burdens for low-wage CHB owners and raise them for high-wage owners, relative to the MWM; however, these results are somewhat circular insofar as the income stratification is based on post-treatment wage income. An income stratification based on total wage and capital income from both CHB and non-CHB sources would give a better picture of the relative progressivity of the MWM vs. asset-based allocation methods.

The impact of shifting from the MWM to GAM or NAM affects economic sectors differently depending on their capital intensity. Skilled labor-intensive sectors such as health and professional services tend to see an above-average increase in their tax burden, while capital-intensive fields such as real estate and construction experience a more modest increase. These estimates may provide some indication of what industries might support or oppose a shift to an asset-based method of resource allocation.

Future avenues of this research include formally modeling the incentive effects of wage-based vs. asset-based methods for CHB owners under a dual income tax and estimating the effect of an optional lower capital income imputation rate for small businesses.

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