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# HOW WOULD THE DESIGN OF AN ALTERNATIVE MINIMUM TAX IMPACT THE EFFECTIVE CORPORATE TAX RATE IN BELGIUM?

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## ABSTRACT

How would the design of an alternative minimum tax impact the effective corporate tax rate in Belgium?\*

The main purpose of this paper is to provide an assessment of the impact of the introduction of an alternative minimum tax (AMT) in Belgium with a focus on the impact on various distortions margins. In the process, we provide an up-to date account of the state of effective corporate taxation in the country. The current ETR is 15.7%. For a 1% of GDP increase in revenue, the ETR of an income based AMT would increase to 24.3% illustrating the potential payoff of a significant simplification of the current system. For a politically viable asset based AMT, it would roughly double the ETR. An income based AMT would somewhat reduce the distortions across sectors and firms sizes while an asset based AMT would increase it. As expected, an asset based AMT would penalize more large firms since they are more capital intensive. Small firms could actually be better off under an asset based AMT than under an income based AMT. But any decision on the AMT in Belgium is likely to be polarizing. Small firms currently represent 84% of the number of businesses, 35% of the jobs and 22.4% of the tax revenue. Large and very large firms represent less than 4% of the number of business but almost 50% of the jobs and over 60% of the tax revenue.

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## 1. Introduction

Corporate income taxes in Belgium offer a good illustration of the never ending increasing complexity of the taxation of business income observed in many countries and of its consequences in terms of distortions in the treatment of taxpayers. Anyone who has ever spent some time thinking about corporate income taxes in the real world has experienced first-hand the creativity with which financial and fiscal engineers make the most of loopholes and international tax arbitration to minimize tax liabilities.

The international evidence shows that this creativity stimulates inefficiency and unfairness and hurts revenue significantly more than governments and the beneficiaries of the advantageous tax treatments are willing to recognize. Considering that the share in GDP of gross operating surplus and mixed income in the EU was around 42% in 2011 and that corporate income taxes only yielded 2.5-3% of GDP on average, the de facto average tax rate on business profits seems to turn around 7%. This is far from the statutory tax rates in most countries which averaged 23.2% in 2010 for the EU-27.

Because of the high revenue costs of tax breaks, the most aggressive proposals aiming at changing the taxation of business profits tend to focus on their revenue payoffs rather than on the high distortions associated with these tax breaks. One of the most pragmatic solutions recently considered in Belgium is the introduction of an alternative minimum tax (AMT). This is a de facto parallel tax system. In many countries, these minimum taxes are seen as a form of presumptive taxation that needs to kick in when the tax authorities cannot manage to reconcile tax revenue with assessed potential tax bases. The alternative form of taxation can take several forms and can be explicit or implicit (i.e. it functions as an AMT even if it is not called an AMT). Sometimes, they only apply in certain sectors hard to monitor (e.g. the German minimum tax on PC distributors in favor of copyright holders to compensate for damage from piracy introduced around 2005). They can also be quite broad based as in the US. They can be levied on real income (US, Canada, India), on potential income (France or Israel), on net cash flows (Mexico) or assets (Argentina, Austria, Columbia or the Dominican Republic—and Mexico in the late 1990s) and can function as regular income or wealth taxes, as withholding taxes or simply limit deductions.<sup>1</sup>

In practice, in most cases, under an AMT, whether formal or implicit, the business taxpayer computes its tax liability under the regular and this alternative system and faces the higher of the two figures as tax liability. Ideally, the alternative tax system looks a lot like what the desirable tax system would look like. But even that is difficult when a country has a poor accounting or fiscal recording tradition. A possible and common solution is to base the tax on the assets of the firms but this can penalize capital intensive firms if implemented carelessly. Moreover, there are multiple possible definitions of an asset that could be considered. In a nutshell, this means that AMT can be income or asset based depending on country specific circumstances.

Politically, the AMT can be attractive. Launching an alternative tax can be easier than having to launch a full tax reform and it can have the fast revenue payoff hoped for by governments trying to manage fiscal concerns. Of course, this is also why the business world does not really like the instrument. And this is why governments including fiscal conservatives in their midst tend to be reluctant to test the approach in an uncertain economic environment in which any threat by firms can also be a political risk.

The political economy of the AMT is predictable. As expected, the business threats usually come from firms or sectors most likely to see their tax liability increase. Indeed, to a large extent, discussions around the AMT tend to focus on revenue. The business world understands that politicians want more revenue and firms with low effective average tax rates simply do what it takes to continue minimizing their tax liabilities. The problem with allowing a

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<sup>11</sup> See for instance Faulk et al. (2006) for a review of the international experience of presumptive taxation.

debate focused mostly on revenue and tax liability is that it ignores, or at least underestimates, the need for tax systems to be efficient and equitable in the treatment of taxpayers, including business taxpayers. These features are needed to ensure the long term economic, fiscal and political sustainability of a tax system and maximize its growth payoffs.

It turns out that the evidence available suggests that efficiency and equity payoffs of an AMT are not straightforward and deserve a closer look. An AMT does not have to have neutral effects across firms according to sectors, to size or even to financing sources. Academics have already provided insights on the relevance of this additional potential scope or/and the limits for efficiency and equity gains that can be achieved from various designs of the AMT (Lyon, (1990), van Wijnbergen, S. and A. Estache (1999). Feenberg D, J. Poterba (2003), Sureth C and R. Maiterth (2005, 2008)). To our knowledge, this assessment has never been conducted for Belgium. Yet, in recent months, in the context of the fiscal efforts that need to be made to reduce the debt of the country, several political parties have tried to place the AMT on the political agenda—without much success so far.

The main purpose of this paper is thus to provide an assessment of the impact of the introduction of an AMT in Belgium with a focus on the impact on various distortions margins. In the process, we provide an up-to date account of the state of effective corporate taxation in the country. The main emphasis is on sectoral distortions that may result from the current system but also any distortion related to the size of the firms and to their source of financing. This will serve as a benchmark to assess the effects of an AMT not only in terms of revenue but also in terms of efficiency and equity.

The methodology to compute the effective tax rate is very similar to that used in earlier papers on effective tax rates in Belgium and in particular papers such as Halleux and Valenduc (2004) who rely on firm level data. Unlike them however, we do not have access to the official tax return data and we rely mostly on accounting data (balance sheets and profits and losses accounts) as reported in the Amadeus dataset--a commercial database accessible from our University library.

Besides the fact that our data is more recent, one of the advantages of this paper is that thanks to the improved technology that allows for better treatment of information, we have been able to work with a significantly larger number of firms. In fact, if a firm has reported all the accounting data we need to Amadeus, it is part of our sample. This means our initial sample size is around 354,000 firms which drops down to 284,000 once all firms with missing data have been excluded.<sup>2</sup>

The rest of the paper is organized as follows. Section 2 summarizes the Belgian taxation of business income. Section 3 explains the approach followed to quantify tax distortions in the taxation of corporate profits in Belgium. Section 4 discusses the data. Section 5 presents the assessment of the effective tax rates. Section 6 explains how we modelled the alternative minimum tax. Section 7 summarizes the impact of the introduction of various designs of an alternative minimum tax. Section 8 concludes.

## **2. The taxation of corporate profits in Belgium**

Belgium had (and still has at the time of writing) a progressive corporate income tax capped at 33.99% (including a 3% crisis surcharge) levied on worldwide income--corrected when needed through a system of foreign tax credits.<sup>3</sup> When compared to other European members, its statutory rate is on the high side, along with France (34.4%), Italy (30%), Spain

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<sup>2</sup> Our sample also excludes firms which were filling for bankruptcy or were considered as “inactive” by the Belgian laws in 2010.

<sup>3</sup> In 2010, the progressivity was achieved as follows: for income from 0 to 25.000€, the tax rate is 24.98%; from 25.000 up to 90.000€, 31.93%; from 90.000 up to 322.500€, 32.54% and for income above 322.500€ the normal rate of 33.99% applies. Reduced rates only apply for companies that meet specific criteria.

(31%) and Germany (30%). But the rates only tell part of the story since the size of the tax base matters as well.

Although the tax base definition is quite standard and encompassing, Belgium also offers a wide range of tax incentives, allowances, credits and exemptions which helps explain why revenue from this tax adds up to less than 3% of GDP. It is notable that Belgium has a higher tax statutory rate, but a lower revenue than the EU average.<sup>4</sup> This is often blamed on the importance of the multiplicity of tax breaks. The highest profile break was introduced in 2006, the so-called “*Notional Interest Deduction*” also known as “*risk capital deduction*”.<sup>5</sup>

The idea underlying the notional interest deductions was to correct the fiscal disadvantage of using equities rather than debt to finance a company. These deductions (under specific criteria that we will not discuss here) are computed as a predefined percentage of the company’s adjusted equity base and are deducted from the tax liability.<sup>6</sup> The accumulation of such tax breaks is widely seen as a key explanation for the fact that despite its high statutory tax rate, Belgium remains quite effective at attracting foreign investment.

Despite the apparent modest impact on the attractiveness of the country for foreign investors, there are other concerns associated with the current complexity of the tax system. In the current debates on the scope for changes in the taxation of business in Belgium, one of the issues raised is the diversity of observed average tax rates paid by different types of firms. These differences reveal discrimination of the tax system across sectors and across firm sizes.

A 2009 study conducted by an extreme left political party (PTB, the workers’ party) widely discussed in the media showed that the top 50 largest firms in Belgium only paid an average rate of 0.57% and the top 1000 paid an average rate of 5.73%. According to that study, the real average tax rate on corporate profits is 9.8%—quite close to our earlier rough estimate for Europe! As expected, the study was contested by the Belgian business association (FEB) who released a study arguing that the median tax rate on corporations was 26.2% based on the analysis of 130,000 firms in 2010. According to that study, small firms paid 25.9%, medium firms 27.4%, large firms 28.6% and very large firms 27.2%. This indicates that any debate on reforms on the taxation of businesses in Belgium should not just be about rate levels but also about the fairness of treatment.

To see how relevant the debate on the need to reform the system is, consider another back of the envelope computation. If the PTB study is right, the effective tax base is 70% lower than what it should be if pure accounting profits had been taken into account. If the FEB study is right, the tax base is only 26% lower. The range is quite large, but even the minimum seems like a very significant discounting of the tax base. This all explains why effective tax rates in Belgium are significantly lower than their statutory rates would suggest. Moreover, these rough figures also suggest that the scope to cut the statutory tax rates combined with a widening of the base should be considered as a viable option for improvements in revenue, efficiency and equity as well as a simplification and hence a reduction in compliance and monitoring costs associated with the tax.

It may be useful to point out at this stage, that this is not really an ideological debate anchored in a confrontation between the left and the right in Belgium. The calls for tax reform on revenue and equity grounds made by the left leaning community have recently found support from an independent (but usually conservative) think tank, Itinera in various op-eds (see their web site), by a Belgian academic working for the Economy Ministry (Valenduc

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<sup>4</sup> For a detailed list of Belgian accounting rules, please refer to Offermanns, R. (2011)— “Belgium – Corporate taxation” - IBFD, Amsterdam, 28<sup>th</sup> of March 2011.

<sup>5</sup> European Commission’s website – Taxation and Customs Union – Corporate income tax, Belgium – visited during winter 2013.

<sup>6</sup> The rates for Notional interest deduction in 2010 were 4.473% and 4.973% for non-SMEs and SMEs respectively.

(2011)) and by one of the big four accounting firms (Pwc (2011)). Unsurprisingly, the main point from the critics of the current tax is that it could be simpler, with a broader base and a lower rate. In a nutshell, from a more analytical and technical perspective, it could be designed to increase the average effective rate while cutting the marginal rates.

But as anywhere in the world, the politics of tax reform are at least as complex as the design of a corporate income tax and politicians seem to prefer changes at the margin rather than structural changes. Belgium is not different. The latest EU tax reform monitoring report (2012) shows that Belgium continues to try to find ways of broadening the tax base (a lower cap for notional interests deductions, new rules for company cars taxation, stricter thin capitalization rules and lower scope for carry forward of some tax deductions). The goal is clearly to try to be at least revenue neutral and ideally enhancing but these reforms do not really significantly improve the simplicity of the system and do not do much to reduce compliance and monitoring costs.

What's unfortunate in the on-going process is that the macroeconomic concern for revenue largely dominates any concern for efficiency in most of the debates. Yet, there is some academic research—although not really that much--on the extent to which the variance of effective tax rates is large or small in Belgium. The oldest research (Nicodeme (2001)) illustrated how effective tax rates compared across countries. Some research has been conducted on distortions introduced by the business profit taxes according to the size of the firms (Nicodeme (2002, 2007), Vallenduc (2004)) or the legal structure of the firms (corporate vs non-corporate profits (Halleux and Valenduc (2007))). Vandebussche et al. (2005) and more recently, Goesaert (2011) have documented the extent to which there is evidence of tax differentiation across regions in Belgium. All these results are quite robust and quite comparable across methods, time and coverage.

Although useful as a benchmark, it could be argued that they are not up to date enough to inform the current debate on the need for reform since the research was conducted over 5 years ago and relies on data that are often 10 years old (the Halleux-Valenduc paper is the most exhaustive but deals with 2003 data). So, to ensure that our assessment of the effects of a minimum tax is anchored into the latest data available publically, we start with an update of the assessment of the effective tax rates under the Belgian system of taxation as of 2010.

### 3. Assessing the effective corporate income tax rate

Our focus is on the effective tax rate, which is the ratio of tax actually paid over a proxy for the statutory tax base. To assess it, we rely on the micro backward-looking approach as first done for Belgium by Nicodeme (2001) as part of an assessment conducted for a large number of countries. What's attractive about this approach is that computations can solely be based on reported accounting data instead of assumptions and this is important, since unlike Halleux and Valenduc (2004), we do not have access to the actual tax returns. The robustness of the assessment of the effective tax rate, however, depends on how well the tax base has been defined and how well it reflects the key aspects of the tax system focused. In the Belgian case, some details such as the notional interest deductions can be quite hard to model, demanding somewhat strong assumptions.

The specific approach we follow can be summarized as follows. If  $t$  is the statutory tax rate on profits and  $B_0$  the tax base, i.e. profits, the theoretical tax revenue is  $T_{\text{Theo}}$  and can be expressed as:

$$(1) T_{\text{Theo}} = t \cdot B_0.^7$$

The tax base can easily be generated from the basic accounting data for each firm since it is simply the difference between Sales (S) and Operational Costs (C)—that's labor costs, purchases of inputs, financial costs, and amortization:

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<sup>7</sup> Note that since the tax rate is progressive in Belgium,  $t$  should be a function. But to simplify the presentation of the approach we model it as linear. In our empirical assessment, however we model the non-linearities to



$$(2) B_0 = S - C$$

However, the Belgian tax system (as many others) allows many tax breaks and the outcome is a much lower tax payment than suggested by the theoretical tax base. Let's call this lower tax payment  $T_{Obs}$ , the observed tax payment, since it can be observed in the accounting data.

The difference between the observed and the theoretical tax payments can be used to assess the importance of fiscal benefits FB:

$$(3) FB = T_{Theo} - T_{Obs}$$

Using (1), we can derive

$$(4) FB = t \cdot B_0 - T_{Obs}$$

Even if some of the revenue gap can partially be explained by lower tax rates for some firms, the fiscal benefits can be modelled as a narrower tax base. Let's call this narrower tax base  $B_1$  and for a given tax rate, we can thus write:

$$(5) T_{Obs} = t \cdot B_1$$

This allows us to see the intuition between the size of our proxy for the fiscal benefits  $FB$ . Indeed, combining (4) and (5), with standard accounting data on revenue (S), cost (C) and actual tax payments ( $T_0$ ) as well as a careful modelling of the tax rate structure (approximated here as a simple tax rate for the sake of simplicity), we can generate (6) for any firm:

$$(6) FB = t \cdot B_0 - T_{Obs} = t \cdot (B_0 - B_1)$$

Clearly the simplification built in (5) limits the detailed analysis of the sources of tax distortions. Indeed, FD is the sum of two types of fiscal deductions. Some are standard deductions similar to those found in most tax systems in the world such as reductions for investments in R&D. The rest are country specific decisions such as subsidies or the notional interests discussed earlier, regional or sector specific tax incentives. Unfortunately, the data does not allow us to distinguish between these two sources of fiscal deductions. Yet only the second type is what should be challenged for their cost and equity of the tax system.

With that limitation in mind and considering that what we are concerned with is the size of the distortions rather than their source, we can now show how we compute the effective tax rate with the data available for our large sample of firms. Adopting Nicodeme's (2001) suggestion, the effective tax rate net of all the effects of all tax incentives ( $ETR_n$ ) is as follows:

$$(7) ETR_n = \frac{\text{Tax Paid}}{\text{Tax Base}} = \frac{(B_0 - B_1)}{B_0}$$

In accounting terms,  $B_0$  and  $B_1$  are respectively the Profit and Losses ( $P\&L$ ) before and after tax as reported in many publically available databases. The difference boils down to the taxes paid in an accounting sense.

To get a sense of the relative importance of all types of tax deductions, we also compute the Effective Tax Break Rate, ETBR,

$$(8) ETBR = \frac{FD}{\text{Tax Base}}$$

The maximum scope for effective taxation of profits under the current system can then be approximated as the sum of the  $ETR_n$  and of the ETBR, we label this sum, the gross effective tax rate:

$$(9) ETR_g = ETR_n + ETBR$$

If all firms had a positive profit and the relevant tax rate was the highest one,  $ETR_g$  would be equal to 33.99%. In practice, we modelled the progressivity of the tax rate—which includes lower rates for small profits typical of those observed in small firms and a 0 rate for firms without any profit. Because of the small size of a large number of firms in Belgium and the large number of firms with a 0 or negative profit, there is no reason to expect the average  $ETR_g$  to reach this maximum in many sectors. But the ability to get a sense of the relative importance of ETBR gives us a sense of the limits of the scope for increases in tax revenue from reductions in fiscal deductions. If  $ETR_g$  is close to the statutory tax rate, the elimination of tax deductions would be sufficient to increase tax revenue. If it is not close to the statutory rate, there are other reasons why the tax on businesses does not yield the expected revenue which cannot be picked up from the accounting data reported by the firm.

#### 4. Data

The data is for the accounting year 2010. The data is extracted from reports made on an unconsolidated reporting basis. The total number of observations available is about 355.000 with 55 different variables before processing. The specific content of our sample is an aggregation of data from the Balance Sheet, the Profit & Loss statements of Belgian companies plus additional categorization variables related to their size, sector of activity, and financial ratios.<sup>8</sup> Our sample covers about 90% of the active companies located in Belgium.

The data can be organized according to size, sectors and level of returns. The database also offers information on the employment level for most of the firms. Size can be measured in terms of operating revenue, the total asset value or in terms of the number of employees. The sectoral classification is simpler and quite standard. We have unbundled the economic activities into 37 categories. They correspond to a categorization followed by the National Bank of Belgium in most of its annual reports.

The data has limitations however. First, on some dimensions, the reported values are quite aggregated and limit the possibility of any forensic evaluation of precise elements such as investment incentives (e.g. Notional Interest Deduction) even if it allows approximations of the impact of the tax breaks. Second, it does not correct for the difference in computation steps and sequence adopted by companies. These differences sometime trick the AMADEUS database which returns a “missing value”. Third, other missing values are also frequent because data is simply unavailable. As a result, the number of observations used in our computations varies depending on the amount of these missing values. Finally, the database is a collection of data from unconsolidated accounting reports. As a consequence, each subsidiary belonging to a larger group will be considered as a separate entity. Since most of our computations are effective tax averages by size or sector of activity, certain categories of results may include companies matching the criteria of a group, but which are solely existent because they belong to a larger entity. For this reason, our results can be biased in providing a clear answer to the question: Do large groups pay a lower tax rate?

The rest of this section provides a first glimpse at the raw data available. Graph 1 shows the number of observations per group of firms according to firm size. The larger the firm size, the lower the number of firms. Large and very large companies together only represent 4% of the total observations, while small companies represent 84% of the firms.

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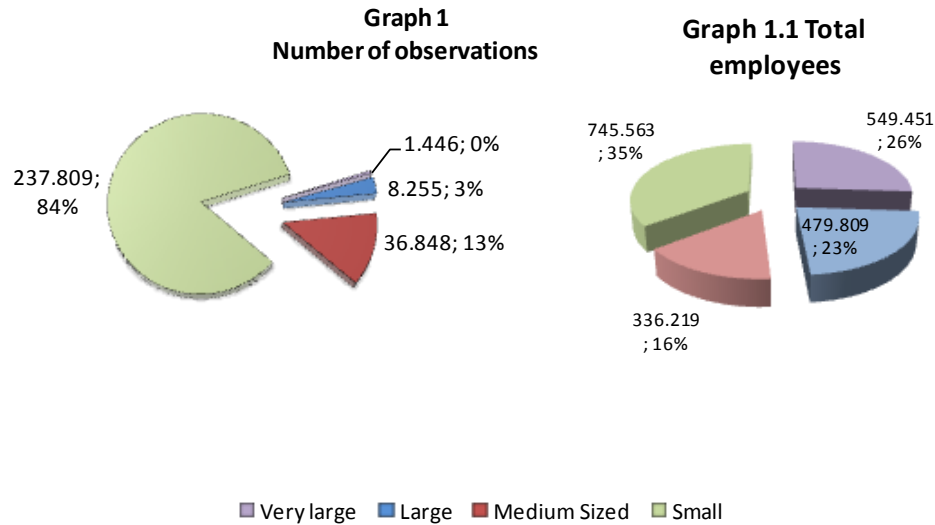
<sup>8</sup> Differences in the Amadeus collection process from one firm to another add some additional computation steps in practice in the cases in which the data on P&L needs to be used. Indeed, two cases exist. Some firms include the value of the “Extraordinary P&L” directly in the EBITDA. Thus, the value of the “Extraordinary P&L” is imbedded in early accounts and AMADEUS returns a “n.a.” value for the account called “Extraordinary P&L”. Other firms do not include the value of the “Extraordinary P&L” in early accounts such as in the EBITDA, but instead have a separated “Extraordinary P&L” account which value is not null, and which is added up right before the tax computation. We corrected manually the data to ensure the comparability of the definition of P&L across firms.

*(The real percentage of small companies may be overestimated since this category also includes some belonging to a larger group).* Graph 1.1 highlights the total number of employees for each category size. The distribution across categories is less extreme. The small companies employ 35% of the workers, while the medium size firms are the smallest employers with only 16%.

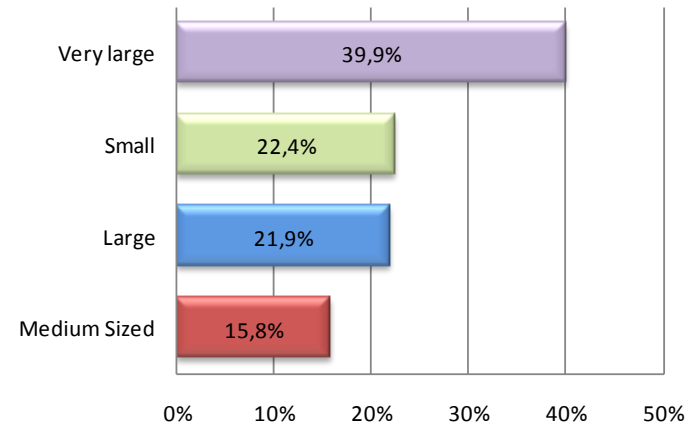
Graph 2 shows how the aggregate corporate tax revenue is distributed according to firm size. Very large companies represent 39.9% of the total, followed by small and large with nearly equal contribution of 22.4% and 21.9% respectively. Medium size firms only contribute 15.8% of the total revenues. Graph 3 shows that over 60% of the revenue is generated by large and very large firms which represent less than 4% of the number of firms in our sample and contribute 49% of the direct jobs.

Finally, to get a sense of the relative importance of the various size categories, Graph 4 is a normalized measure of the amount of tax paid per company in each category. As expected, the average tax contribution of companies increases with size at the company level (in contrast to the trend at the aggregate level as seen in Graph 1). The revenue of a very large firm represents 290 times the revenue of small firm, 64 times the revenue of a medium firm and 10 times the revenue of a large firm. This is the sort of basic data that should drive the sense of priorities for audits when revenue is the main concern. It is interesting to note however that the standard deviation found also significantly increases with size, suggesting that revenue uncertainty increases with firm size.

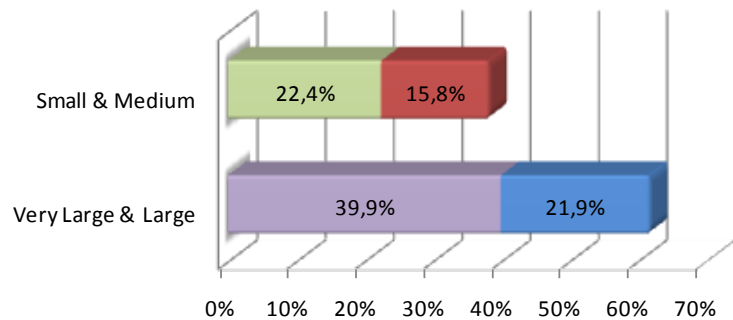
## A first look at corporate tax revenues, in amounts and per company size



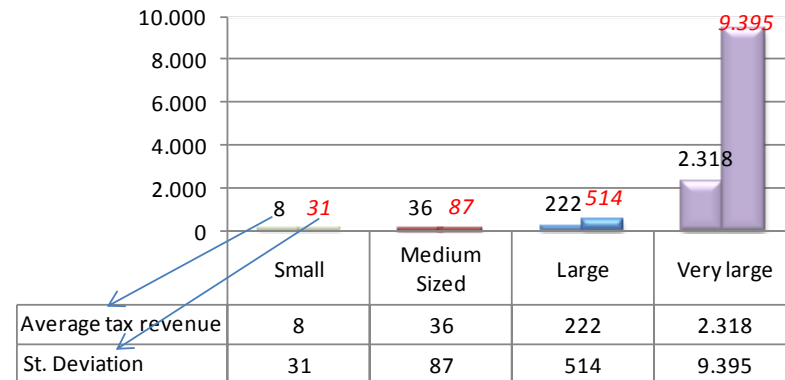
**Graph 2**  
Amount of tax revenue expressed in percentage of total



**Graph 3 - Amount of tax revenue expressed in percentage of total cumulated for Very Large & Large and Medium & Small**



**Graph 4 - Average tax revenue per company, in thousands of €**



Source: our own computations – When graphs contain numbers other than percentages, these are in thousands of Euros.

## 5. Estimates of the effective tax rates in 2010

The discussion of effective tax rates is organized around two key policy margins for which fairness and efficiency may be an issue: size and sectors. We also distinguish between net and gross effective tax rates to give a sense of the average implicit total fiscal benefit for each category, accounting for profit size and matching statutory rate.

To identify the main stylized facts according to size, we report 3 graphs. Graph 5 reports the net ETR as a function of firm size, Graph 6 gives the gross ETR and Graph 7 matches ETRs, tax incentives, firm size with returns on assets. Graph 5 shows that firms only pay an average net effective tax rate of 15.7%, less than half the statutory rate of 33.99%. This confirms the intuition of many of the national observers on the challenges of business taxation in Belgium. Accounting for the distribution of profit and for the progressivity of the corporate tax system but ignoring other tax breaks, Graph 6 shows that the average tax rate could have been at 23.5%, if it were not for the loopholes.<sup>9</sup> Although it is closer to the statutory rate, it is still quite distant, reflecting the fact that many firms hardly make profit in an accounting sense in 2010. Note that if they made any profit, they could have averaged out losses over time since there are no limits in time to carry forward of losses in Belgium.

The combination of Graphs 5 and 6 point to a remarkable characteristic of the Belgian tax system. The largest firms pay the lowest net effective tax rate but enjoy the largest rate of fiscal benefits. Their net rate is indeed 13.5% while their gross rate suggests that it could have been 30.5% without fiscal benefits. Large firms are the second largest beneficiary of tax breaks (13.2%) but they also pay the highest net effective rate (16.2%). It is also notable that small companies start from the lowest gross rate of 22.9% but pay the second highest net effective tax rate (15.8%).

A complementary dimension of distortion across firm sizes is supplied through an assessment of the impact of taxes on the financial viability of each firm. We focus on the returns to assets since it could be used as a proxy for the return on capital. The first observation that stands out is that taxation narrows down the range of returns to assets. The second is that indeed size matters. The gross return ranges from 4.3-4.4% for very large and medium size firms to 5.7% for small firms. The net return ranges from 3.4% (for medium size firms) to 3.9% for large firms. The lowest impact of taxes is on the very large firms and the highest on small firms. The implicit rate of taxation revealed by this accounting data is quite significantly larger than the ETRs (34.5% on average), but it includes most of the other taxes imposed on capital income.

The second set of differences that deserve consideration when trying to assess the fairness and the efficiency of the tax is any difference across sectors. The results of the computations of the sector specific average net and gross ETR are reported in Graph 8. The graph is sorted by increasing order of “gross” effective tax rate to easily identify which sector benefits from the largest share of tax incentives in percentage of its tax base.

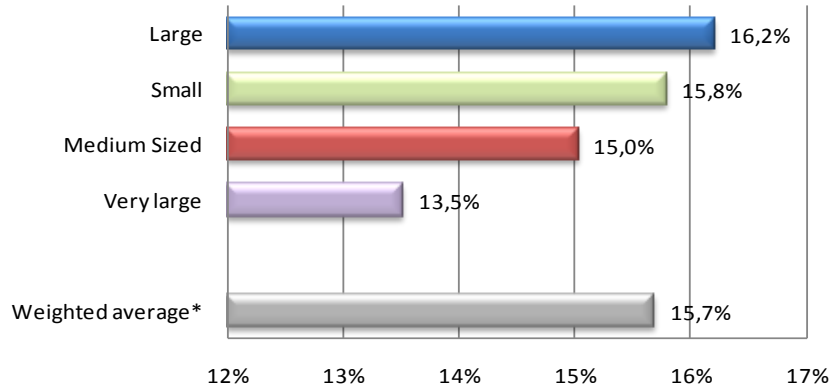
With respect to both the net and the gross ETR, the first observation to stand out is the wide diversity of rates, suggesting that there has to be a fairness and probably an efficiency problem as well in the way taxes apply to different sectors. The net rate ranges from 3.9% to 26.5%, for an average of 15.7%. The gross rate ranges from 18% to 30.3% for an average of 23.5%.

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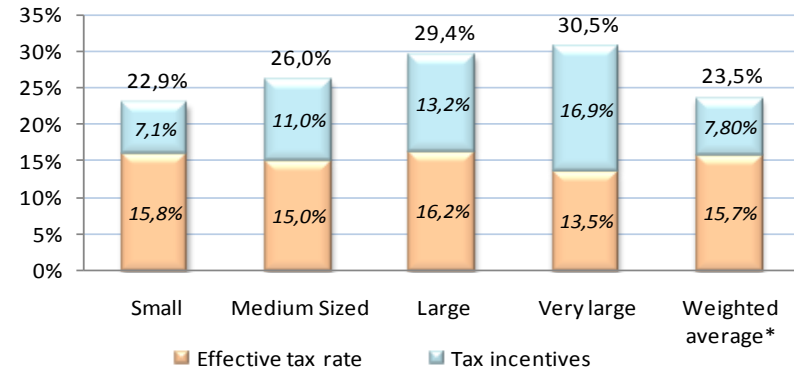
<sup>9</sup> Aside from the effect of accelerated depreciation methods allowed by the Belgian tax rules.

## Effective tax rates per company size

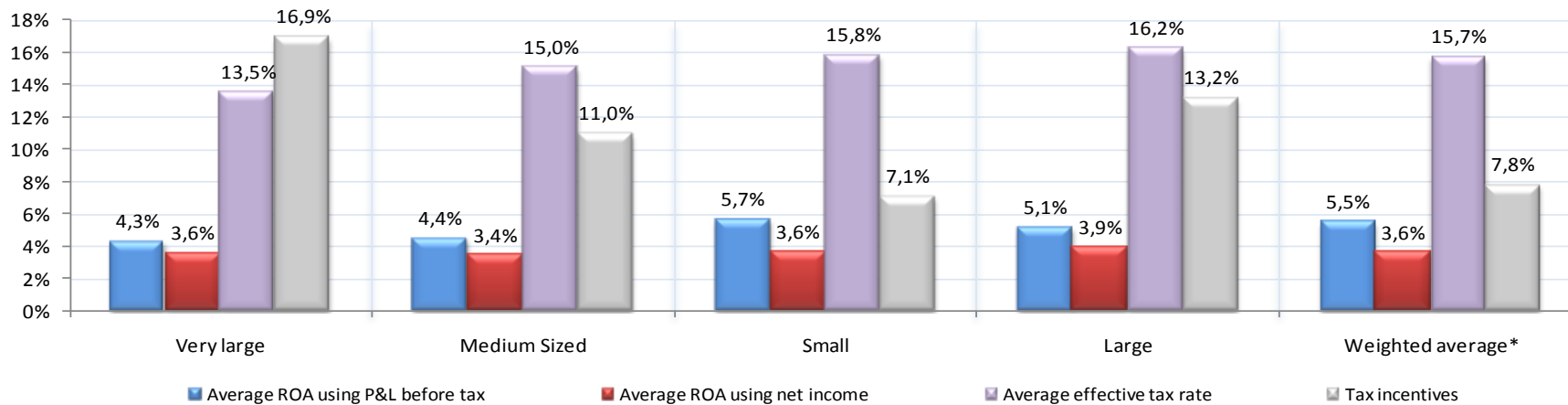
**Graph 5 - Effective tax rates**



**Graph 6 - "Gross" effective tax rate**  
resulting from the cumulation of the effective tax rate with tax incentives



**Graph 7 - Effective tax rates, Return on Assets and tax incentives**



Source: own computations - \*Each company in the database is given a weight equal to 1 / (N-1) in weighted average

Out of the 37 sectors, 9 have a net rate of 10% or less (agriculture and forestry, accommodation and food, other services, arts and entertainment, home care and social services, education, real estate and electricity, gas, steam and air conditioning and public administration). The lowest rate is for home care and social services. Only 3 sectors face a net ETR above 20% (human health services, legal and accounting services, IT and other information). The highest rate is for human health services. The low net ETR are matched by high levels of tax breaks also distributed unevenly across sectors. The composition of the gross rates shows that 9 sectors enjoy tax breaks of 10% or more (arts and entertainment, homecare and social services, manufacture of textiles, education, mining, public administration, water and sanitation, chemicals, manufacture of coke and refined petroleum products). The three sectors with the highest net ETR are also the only 3 sectors with tax breaks adding up to less than 6% of ETR (human health services, legal and accounting services and IT and other information).

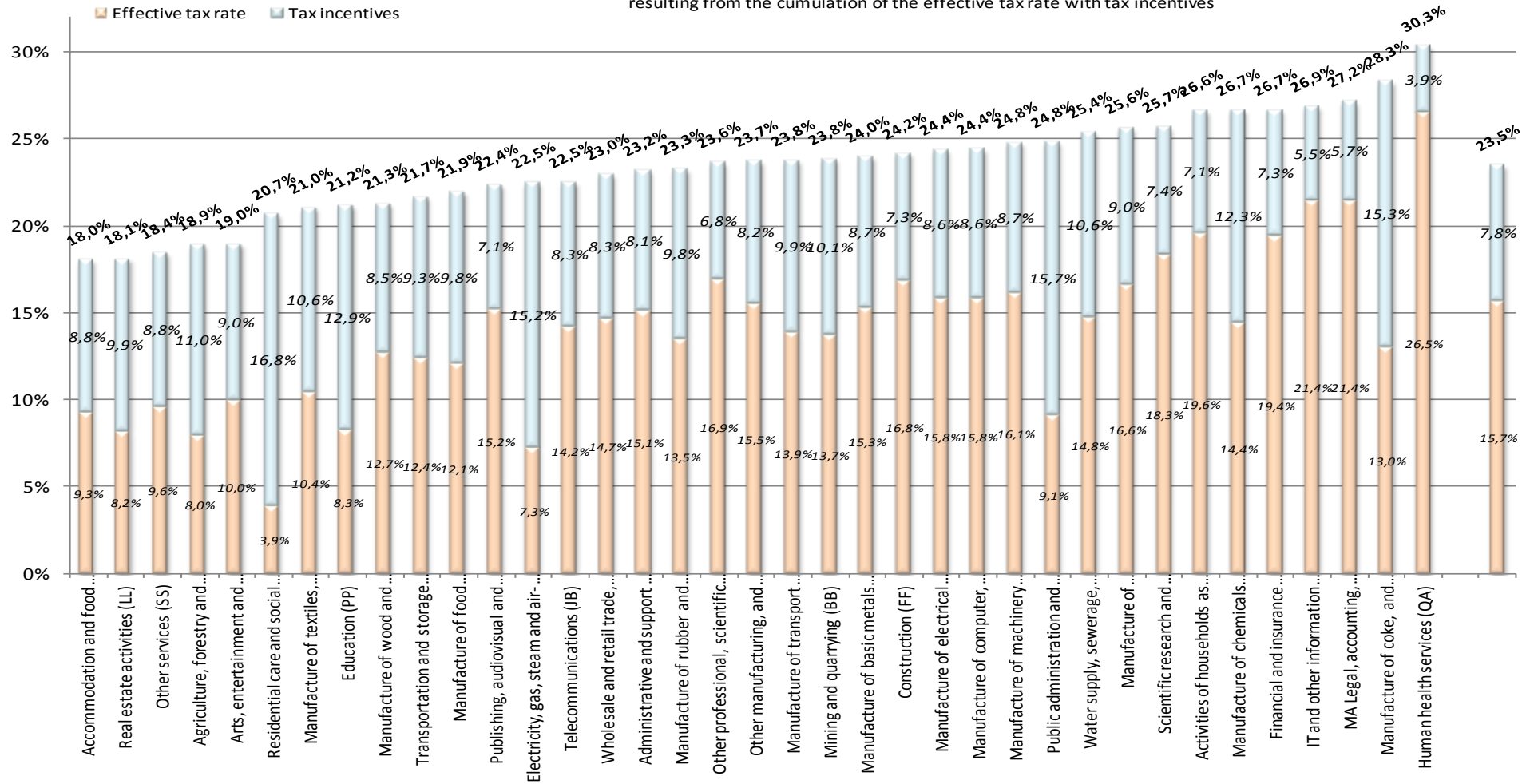
Some of the diversity could be explained by the heterogeneity both across sectors and within sectors. Some sectors are composed of a few large firms and others of many small ones. Some sectors enjoy high returns and are hence potentially taxed at the highest rates, others hardly made any profit in 2010 and faced a rate much lower than the maximum. But the diversity of tax breaks is just as impressive and is hard to correlate to any obvious factor without a much more detailed analysis that goes beyond the scope of this paper.

The main lesson of this section may simply be that there are indeed good reasons to be concerned with the way in which revenue is lost by the Belgian tax authorities. The low revenue level in comparison to similar countries is associated with significant distortions across firms according to their size and to their sector. While a general equilibrium assessment is clearly more indicated to have a full sense of the incidence of these distortions, the results provided so far clearly confirm the relevance of the standard criteria to be used to assess the potential effectiveness of the introduction of an AMT. For the tax to have more than a revenue effect, it should ideally also lead to reductions in distortions across firms and sectors to minimize the welfare losses and inequities that tend to result from such distortions in the design of a corporate income tax.

The results provide a number of additional insights to the tax authorities. First, they show that the scope for a broadening of the tax base combined with a reduction in the statutory tax rate is very significant. Consider the 1446 very large firms who, in 2010, enjoyed the lowest net ETR at 13.5% but contributed about 40% to the revenue from this tax. The experience shows that they tend to make the most of the fiscal benefits and would obviously be reluctant to see any tax change that would increase their tax liability. Even if it seems hard to argue against an increase in this tax liability out of fairness, the results show that this increase would not have to be very significant and could easily be coupled with a formal reduction in the statutory rate that would reduce the ETR for some of the highest taxed firms.

## Graph 8 - "Gross" effective tax rate per sector of activity

resulting from the cumulation of the effective tax rate with tax incentives



Source: own computations



## 6. Modelling an alternative minimum tax

In the transition, the firms need to compute two tax liabilities. The first is the tax that prevails under the old tax system and is thus business as usual. This is the  $T_{obs}$  we have been using up to now in the paper. The second is the tax as built in the design of the AMT. This is  $T_{amt}$ . The firm then pays  $T_{new}$  the highest of the two amounts:

$$(10) T_{new} = \max(T_{obs}, T_{amt})$$

The real challenge is to pick the design for the AMT. The AMT can take two basic shapes. It can either be based on an income as the current one or it can be based on assets. If the AMT is seen as the tax that will eventually replace the current tax, it should probably be income based. If it is simply an instrument designed to reduce revenue losses and distortions across firms and sectors, the asset base may be a reasonable alternative, potentially at least. It has the additional advantage in the current economic context of favouring labour intensive industries and technologies.

For *the income based AMT*, the idea is to identify, for the broadest possible tax base, the rate which would guarantee an increase in total tax revenue for the government. Our target, for the sake of illustration, is an increase of 1% of GDP in revenue from this tax. The easiest tax base is the tax base we used to compute our theoretical ETR.

For *the asset based AMT*, the idea is to identify a possible proxy for the assets of the company and identify the rate that would apply to that asset base to generate the same increase in revenue. The four bases considered are; Total Assets, Total Net Assets, Fixed Assets and finally Total Assets minus LT Liabilities. Each asset proxy has its costs and benefits. All penalize capital intensive firms, some may stimulate borrowing, some raise issues for sectors counting large shares of financial assets in their total assets. But if the idea is to have a relatively simple tax base, assets cannot be discarded per se without at least some sense of the extent to which it could significantly impact jointly revenue, equity and dynamic efficiency (i.e. the incentive to invest). In this paper, we model the simplest form of asset based minimum tax.

There is an issue however that needs to be addressed. Under the current tax system, 31% of the firms in 2010 had 0 or negative profits. Almost a third is quite a significant share but it is driven by small firms. Only 68% of the small firms pay a tax, while for medium sized, large and very large, the shares are respectively, 75%, 80% and 84%. The issue is the extent to which the AMT needs to impose a tax liability on firms currently not paying taxes or to continue protecting them under the new regime. We test both assumptions since they are expected to impact the statutory rate that should be assigned to the AMT. This is relatively easy to model.

## 7. Estimates of the effects of various AMT designs on the net ETR

The section discusses the impact of different designs of an AMT. It is organized along 3 dimensions: (i) a “macro” perspective, which discusses the aggregate impact of taxation; (ii) a size perspective, which shows how much size matters to the impact of an AMT, and (iii) a sectoral perspective, which shows the extent to which an AMT impacts intersectoral distortions as measured by the standard deviation of the ETR.

### 7.1 A “macro” perspective on the average effects of an AMT on the ETR

Clearly we can only provide a limited assessment of the macro impact since we do not rely on a macroeconomic model of the economy. We cannot track the cross sectoral effects

that could result from changes in effective tax rates. We can however provide a first order of magnitude of the impact that realistic revenue targets could have on the effective tax rate.

To get a sense of the trade-offs between the need to increase aggregate revenue from the tax to get closer to the EU average and the need to avoid picking a design that damages the competitiveness of firm, we simulate two revenue targets: 0.5% of GDP and 1% of GDP. The main results are summarized in Table 1. For each revenue target and for each asset base for the AMT, the table reports the statutory tax rate that would have to prevail and compares it to the current one. The table reports the associated average ETR and its variable.

	Current tax system	Under an alternative minimum tax											
		Income based	Asset Based										
			Protecting firms with a 0 or negative income				Not protecting firms with a 0 or negative income (i.e. all firms pay a minimum tax on their assets)						
			Total assets	Net assets	Fixed assets	Total assets minus long term liabilities	Total assets	Net assets	Fixed assets	Total assets minus long term liabilities			
Increase in revenue as share of GDP	-	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	
Statutory Rate (on relevant base)	33.9%	29.5%	0.79%	1.10%	1.14%	0.88%	0.32%	0.58%	0.56%	0.39%			
Average ETR (on broad income tax base)	15.7%	24.3%	36.2%	24.5%	31.3%	31.1%	23.3%	20.2%	23.0%	22.2%			
Standard deviation of ETR	0.25	0.23	3.54	1.07	1.59	1.31	1.43	0.60	0.81	0.62			
Increase in revenue as share of GDP	-	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%		
Statutory rate	33.9%	20.6%	0.61%	0.77%	0.78%	0.65%	0.17%	0.31%	0.29%	0.21%			
Average ETR	15.7%	22.7%	31.1%	21.7%	26%	26.9%	19.6%	18.0%	19.3%	19.0%			
Standard deviation of ETR	0.25	0.23	2.73	0.76	1.10	0.99	0.78	0.37	0.46	0.38			

Table 1 already provides five useful insights from an analytical perspective:

- i. As expected, an AMT, whatever its design, will increase the ETR.
- ii. The highest increase in the ETR is associated with a broad asset based AMT when anchored into total assets for all firms. When protecting the firms with 0 or negative profits, the lowest ETR is with a broad income based AMT or with a net asset based AMT.
- iii. Not protecting the firms with a 0 or negative profit would broaden the asset based taxes enough to allow for significantly lower tax rates. This would penalize firms in real trouble, while bringing into the tax net those abusing from tax loopholes.

- iv. Including all firms in the asset based AMT results in an ETR that is roughly similar to the ETR that would result from a broad income based AMT (which would protect firms with 0 or negative profits but continue to give a break to some of the firms using loopholes, although less so than under the current system).
- v. Except for the broad income based AMT, all AMT designs tested increase the dispersion of ETRs across sectors—as much as 11 times in the case of an AMT based on total assets. This is even more so in the case when 0 or negative profit firms are protected.

From a more political perspective, assuming that the asset based tax is easier to implement based on accounting values of the assets reported (i.e. those used in AMADEUS), the tax rates needed to generate a significant increase in revenue are not that high. Ignoring the sign of profits of firms, a maximum rate of 0.58% is needed on net assets if 1% of GDP is the revenue target and a rate of 0.31% if the revenue target is 0.5% of GDP.

The net asset base may not be the more desirable, however, since it would provide significant incentives to alter the leverage and this could be done by short term debt management. Relying on fixed assets could be easier but would impact capital intensive firms a lot more than service firms for instance. The most realistic tax base, if the AMT is to be based on assets, seems to be Total assets minus LT (long term) liabilities since this allows firms to rely on long terms financing for their investments. The odd aspect of this tax base would be that it would deliver the opposite of what the notional interests were expected to deliver (i.e. reducing the distortion on the financing margins).

The total asset minus LT liability demands a relatively low tax rate (0.21%) for a 0.5% increase in revenue and only increases the dispersion of ETRs by 50% for an increase in the average ETR from 15.7% to 19% for the country. If the government decides to protect firms with negative or 0 profits, for a 0.5% increase in revenue the rate on that tax base would have to be 0.65%. It would result in a 26.9% ETR but almost quadruple the dispersion of this ETR. If the revenue target is 1% of GDP, the tax rate for this tax base would be 0.88%. It would double the ETR and multiply its dispersion by over 5 times if the government wants to protect 0 or negative profits firms. The required rate drops down to 0.39% for an increase in ETR to 22.2% and just a bit over a doubling of the dispersion of the ETR.

The results listed in these tables are fine tuned to exactly produce 0.5% or 1% of additional GDP by imposing firms listed in our sample. In the beginning, the sample contained approximately ~90% (354.000) of the companies located in Belgium but was reduced to 280.000 units when cleaned for missing values. Furthermore, the computation of the 0.5% and 1% of additional value to be produced is based on the 2010 GDP of Belgium, in other words, a GDP that was generated by 100% of the companies located in Belgium. As a result, our findings probably over-estimate the required percentage rates to be applied if an AMT design would officially be introduced in Belgium for generating such additional amounts since the AMT would potentially reach 100% of the companies instead of 280.000 like in our sample.

## *7.2 How much would the impact of an AMT vary with firm size?*

From now on, we discuss the results for the case in which the government wants to generate 1% of GDP in revenue to be closer to the European average. The main story does not really change much for a 0.5% revenue increase target when comparing the differences of impact according to firm size or sector. Table 2 summarizes the results. The results are expected to be mostly driven by the fact that firms of different sizes have a different degree of capital intensiveness. The larger the firm, the larger its capital-labour ratio in general in Belgium and hence the higher the impact of an AMT based on asset. Note that if the AMT is simply based on a much larger income base, it is likely to be the case that very large firms will be the hardest hit.

Table 2 shows that the results validate the intuition. The key additional insight provided by the table is the evidence of the impossibility of protecting firms who currently have a 0 or negative profit. The simulations for the case in which they are protected lead to increases in the ETR for medium, large and very large firms that seem politically unrealistic if the government aims at a 1% of GDP in revenue increase. For the very large firms, a 1% target under the protective scenario, implies an effective tax rate of 212% for a gross asset based AMT. Halving the revenue requirement, would only cut that ETR to 165%.

Under a scenario in which all firms would have to pay some tax, independently of their current tax liability, the highest increase in the ETR would be for an AMT based on total assets minus LT liabilities. It would lead very large firm to have to face a 42.8% ETR, up from 13.5% under the current tax system. Large firms would see an increase from 16.2% to 42.4%, medium firms from 15% to 30.3% and small firms from 15.8% to 20.1%. This implies that the ETR would increase with firm size. This would also be true if the AMT was based on a much broader income base than the current one. Under all AMT, the dispersion of rates would also increase as indicated by the standard deviation. It would however hardly increase for small firms but explode for large and very large firms, with medium sized firms fitting between the two previous groups. This is because the large and largest firms work with affiliates and the optimization of cost and revenue allocations across entities are common accounting practices which cannot be picked up with the data we have but which are consistent with the results we find.

If all firms had to pay a tax, under an AMT based on total assets minus LT liabilities, 48% would continue to pay the regular income tax and 52% would end up paying the asset based AMT. If the AMT were based on the broader income definition, 43% would end up paying the AMT. Under the preferred asset based AMT, 62% of the very large firms would end up paying the AMT, 55% of the medium firms and 52% of the small and large firms. Under an income based AMT, 62% of the very large would be hit by the AMT, 52% of the large firms, 50% of the medium firms and 41% of the small firms.

**Table 2: Impact of an AMT according to firm sizes with a 1% of GDP revenue target**

<b>Table 2: Impact of an AMT according to firm sizes with a 1% of GDP revenue target</b>										
	<b>Impact of alternative designs of an AMT on key policy dimensions (with protection of companies having a null or negative taxbase)</b>					<b>Same exercise but without protection of companies having a null or negative taxbase</b>				
	Current tax system	AMT designs				AMT designs				Income based
		Asset based				Asset based				
	Total assets	Net assets	Fixed assets	Total assets minus LT liabilities	Total assets	Net assets	Fixed assets	Total assets minus LT liabilities		
Rate	33.99%	0.792%	1.103%	1.138%	0.877%	0.317%	0.583%	0.564%	0.392%	29.496%
	<b>Average net ETR</b>					<b>Average net ETR</b>				
Large firms	16.2%	91.9%	51.9%	74.0%	77.9%	45.0%	34.6%	44.3%	42.4%	26.8%
Medium firms	15.0%	59.5%	36.7%	48.7%	51.4%	31.6%	26.1%	31.0%	30.3%	25.6%
Small firms	15.8%	29.6%	21.5%	26.8%	26.0%	20.8%	18.7%	20.9%	20.1%	24.0%
Very large firms	13.5%	212.2%	59.4%	72.6%	83.0%	91.0%	37.1%	42.0%	42.8%	27.5%
Country	15.7%	36.2%	24.5%	31.3%	31.1%	23.3%	20.2%	23.0%	22.2%	24.3%
	<b>Standard Deviation of ETR</b>					<b>Standard Deviation of ETR</b>				
Large firms	0.21	6.14	4.26	6.72	4.88	2.45	2.25	3.33	2.18	0.18
Medium firms	0.25	2.38	1.75	2.37	2.14	0.96	0.94	1.18	0.97	0.23
Small firms	0.25	0.68	0.40	0.63	0.60	0.34	0.29	0.36	0.33	0.23
Very large firms	0.24	44.99	3.82	5.31	4.93	18.00	2.02	2.63	2.20	0.21
Country	0.25	3.54	1.07	1.59	1.31	1.43	0.60	0.81	0.62	0.23

### *7.3 How much would an AMT impact cross-sectoral differences?*

The main purpose of this section is to assess the impact of the introduction of an AMT on the dispersion of ETRs. We assess this for the case in which the AMT is designed to generate 1% of additional GDP revenues. Table 3 depicts the effect of the different AMT designs broken down by sectors of activity and with no protection of companies facing null or negative profits. Three aspects are put forward by Table 3. The first column presents the average net ETR for each AMT design (except the first block that is the current tax system, used as point of reference). The second column is an evaluation of the total percentage of companies that face a tax burden, independently from the source of the burden. Finally, the third column is linked to the second one; it identifies the candidates for which the tax is higher when computed under the AMT system than under the current tax scheme and expresses it as a percentage of companies that pay a tax burden (e.g. companies of column 2).

A first notable result highlighted by this second column is that the AMTs definitely increase the total amount of companies affected by taxes. Three out of four asset based AMTs allow to reach 98~100% of the companies on average while the fourth one, Total Net Assets, shows a slightly lower result with 87%. When using the Income as a base, the percentage is close to the initial situation with only 3 additional percents for a total of 72% of companies paying a tax liability on average.

In addition, a point in favor of the asset based AMTs is the different distribution of the resulting Average Net ETR (first column) compared to the rates observed under the current system. Indeed, sectors which benefit from a currently low average net ETR face a totally different rate when the AMT comes into play. For example, the electricity, gas, steam and air-conditioning supply sector starts with a low ETR of 7.3% that reaches 21.1%, 15.0%, 23.2% and 17.8% under the 4 different asset-based AMTs, that is, two to three-folds the actual rate. In other words, the latter sector seems to benefit to a large extent from fiscal benefits under the current system but the asset-based AMTs successfully identify the potential revenues this sector could actually derive from its assets. On the other hand, this reshuffling of the rates is not as obvious with the Income based AMT; the rates are higher in general, but the ranking of sectors in terms of ETR remains similar. To sum up, the asset-based AMTs successfully offer a different approach to identify potential taxable revenues that may not appear under the current income based tax system. Accordingly, the Income-based AMT shows improvements, but to a lower extent.

Furthermore, what seemed to be a negative point in the previous chapter, namely, the higher standard deviation of the average net ETR caused by the AMTs, may be balanced by an effect present in Table 3. As one can see, the numbers in the third column of each bloc represents the different percentages of companies hit by the AMT, but the highest percentages are most often observed for sectors which benefit from a low ETR under the current system. Such sectors are agriculture, forestry and fishing, public administration and defence, residential care and social work activities. Also, we find the opposite result for companies that start with a large ETR under the current system; human health services, IT and financial sectors are activities that are more lightly hit by the AMTs in average, despite heavy assets in the balance sheet of some of these companies.

As a result, the argument that the asset-based AMTs are weighting heavily on companies with large assets is somewhat mitigated by the finding that they also seem to widely affect companies at ease under the current tax system. Thus, asset-based AMTs hoist smoothing properties since they adapt themselves to the irregularities and distortions observable under the current heterogeneous tax system. The dispersions of percentages in the third column are rather a proof of flexibility than a pitfall increasing distortions since they are a logical response to the chaotic picture found with the present tax system.

**Table 3: Impact of an AMT according to sector of activity with a 1% of GDP revenue target without protection for companies with a negative or null profit**

Sector	Current syst.		Total Assets			Total Net Assets			Fixed Assets			Total Assets Minus LT Liabilities			Income		
	Average net ETR	% facing a tax liability	Average net ETR	% facing a tax liability	From which xx% are hit by AMT	Average net ETR	% facing a tax liability	From which xx% are hit by AMT	Average net ETR	% facing a tax liability	From which xx% are hit by AMT	Average net ETR	% facing a tax liability	From which xx% are hit by AMT	Average net ETR	% facing a tax liability	From which xx% are hit by AMT
Agriculture, forestry and fishing (AA)	8.0%	63%	18.9%	100%	72%	13.1%	84%	53%	20.1%	99%	72%	16.4%	98%	69%	20.3%	67%	53%
Mining and quarrying (BB)	13.7%	70%	31.5%	100%	57%	30.8%	91%	50%	31.7%	99%	56%	31.3%	99%	58%	23.5%	75%	46%
Manufacture of food products, beverages and tobacco (CC)	12.1%	67%	23.0%	100%	62%	17.5%	84%	45%	22.4%	99%	61%	21.6%	99%	60%	22.6%	70%	49%
Manufacture of textiles, apparel, leather and related products (DD)	10.4%	65%	21.6%	100%	67%	18.0%	87%	54%	17.5%	98%	64%	21.7%	98%	66%	21.6%	69%	49%
Manufacture of wood and paper products (EE)	12.7%	64%	20.5%	100%	61%	18.5%	87%	46%	19.0%	98%	58%	20.0%	99%	59%	22.1%	69%	45%
Manufacture of coke, and refined petroleum products (FF)	13.0%	88%	30.0%	100%	54%	23.3%	100%	54%	35.6%	100%	54%	27.6%	100%	54%	26.2%	92%	71%
Manufacture of chemicals and chemical products (GG)	14.4%	78%	23.2%	100%	55%	18.3%	92%	44%	21.3%	98%	51%	22.9%	99%	54%	25.8%	81%	54%
Manufacture of pharmaceuticals, medicinal, biological and chemical products (HH)	16.6%	74%	25.8%	100%	52%	22.9%	90%	40%	28.1%	98%	48%	24.3%	99%	50%	25.4%	75%	47%
Manufacture of rubber and plastic products (II)	13.5%	70%	23.8%	100%	57%	20.5%	92%	47%	22.4%	99%	55%	23.5%	99%	56%	23.3%	75%	49%
Manufacture of basic metals and metal products (JJ)	15.3%	70%	23.9%	100%	54%	20.4%	93%	45%	21.1%	99%	51%	23.7%	99%	53%	24.5%	74%	47%
Manufacture of computer, electronic and optical products (KK)	15.8%	70%	22.2%	100%	52%	19.8%	91%	42%	19.4%	98%	48%	22.5%	98%	50%	24.4%	74%	43%
Manufacture of electrical equipment (LL)	15.8%	71%	22.5%	100%	53%	20.4%	92%	42%	20.2%	98%	49%	23.1%	99%	51%	24.5%	74%	45%
Manufacture of machinery and equipment (MM)	16.1%	73%	22.2%	100%	50%	19.8%	92%	41%	20.0%	99%	48%	22.7%	99%	50%	25.0%	77%	47%
Manufacture of transport equipment (NN)	13.9%	69%	20.7%	100%	59%	19.2%	91%	49%	17.9%	98%	55%	20.8%	99%	58%	23.7%	73%	45%
Other manufacturing, and repair of transport equipment (OO)	15.5%	71%	23.9%	100%	55%	20.4%	90%	43%	21.6%	99%	52%	23.4%	99%	53%	24.7%	73%	46%
Electricity, gas, steam and air conditioning (PP)	7.3%	69%	21.1%	100%	77%	15.0%	93%	68%	23.2%	99%	75%	17.8%	100%	76%	21.7%	71%	58%
Water supply, sewerage, waste management and remediation activities (QQ)	14.8%	75%	23.7%	100%	53%	20.7%	93%	44%	24.5%	99%	52%	22.0%	98%	51%	25.2%	80%	51%
Construction (FF)	16.8%	72%	23.1%	100%	50%	20.3%	91%	39%	22.1%	99%	47%	22.3%	99%	49%	25.3%	74%	46%
Wholesale and retail trade, repair of motor vehicles, motorcycles, mopeds and scooters (RR)	14.7%	69%	22.5%	100%	57%	18.5%	85%	40%	19.7%	98%	53%	22.0%	99%	55%	23.9%	71%	46%
Transportation and storage (HH)	12.4%	65%	20.7%	100%	63%	17.0%	87%	48%	20.7%	98%	61%	19.7%	99%	61%	22.6%	69%	47%
Accommodation and food service activities (II)	9.3%	57%	13.4%	100%	72%	11.1%	70%	42%	14.6%	99%	71%	12.3%	97%	68%	19.5%	59%	43%
Publishing, audiovisual and information communication (JJ)	15.2%	64%	20.4%	100%	57%	18.4%	85%	41%	19.7%	97%	55%	20.0%	98%	55%	23.2%	67%	39%
Telecommunications (JB)	14.2%	62%	19.2%	100%	64%	17.1%	79%	42%	19.1%	95%	59%	18.3%	97%	61%	23.3%	64%	38%
IT and other information services (KB)	21.4%	74%	25.3%	100%	41%	23.4%	90%	31%	25.7%	98%	39%	24.5%	99%	40%	27.7%	75%	36%
Financial and insurance activities (LA)	19.4%	73%	36.7%	100%	46%	29.1%	92%	37%	32.6%	99%	46%	29.7%	99%	44%	27.1%	76%	39%
Real estate activities (LL)	8.2%	58%	21.0%	100%	73%	16.9%	86%	57%	26.5%	99%	74%	18.1%	97%	69%	19.1%	64%	46%
MA Legal, accounting, management consulting and architectural activities (MA)	21.4%	75%	26.8%	100%	41%	25.4%	91%	31%	28.1%	99%	40%	26.1%	99%	39%	27.8%	77%	36%
Scientific research and development activities (MB)	18.3%	72%	35.1%	100%	48%	28.7%	91%	38%	24.2%	99%	47%	30.8%	99%	47%	25.8%	75%	36%
Other professional, scientific and technical activities (MC)	16.9%	67%	23.0%	100%	53%	20.3%	86%	39%	23.3%	98%	51%	22.5%	98%	51%	24.6%	69%	38%
Administrative and support service activities (MD)	15.1%	67%	23.0%	100%	58%	19.5%	87%	42%	23.3%	98%	56%	22.0%	98%	55%	24.1%	70%	42%
Public administration and defence, compulsory social security (ME)	9.1%	73%	32.7%	100%	77%	21.5%	94%	71%	18.3%	98%	76%	33.4%	100%	77%	24.4%	74%	59%
Education (PP)	8.3%	66%	19.0%	100%	77%	17.3%	88%	65%	19.7%	99%	76%	17.1%	98%	75%	21.7%	67%	51%
Human health services (QA)	26.5%	86%	28.8%	100%	22%	28.1%	96%	17%	29.3%	100%	22%	28.2%	99%	21%	30.8%	87%	35%
Residential care and social work activities (QB)	3.9%	68%	21.2%	100%	88%	18.4%	90%	78%	20.9%	99%	88%	20.0%	99%	87%	21.3%	69%	62%
Arts, entertainment and recreation (QC)	10.0%	58%	18.9%	100%	71%	14.9%	77%	46%	18.3%	98%	69%	18.8%	97%	67%	20.1%	61%	42%
Other services (SS)	9.6%	57%	17.2%	100%	72%	16.2%	77%	48%	16.2%	98%	71%	16.7%	98%	70%	19.5%	58%	42%
Activities of households as employers (ST)	19.6%	73%	20.8%	100%	49%	20.2%	84%	30%	20.3%	100%	46%	20.8%	97%	46%	27.4%	73%	38%
Additional revenue generated	0.0%		1.0%			1.0%			1.0%			1.0%			1.0%		
Country	15.7%	69%	23.3%	100%	54%	20.2%	87%	40%	23.0%	98%	52%	22.2%	98%	52%	24.3%	72%	43%

## 8. Conclusions

This paper is the first attempt to assess in some detail the possible impacts of the introduction of an alternative minimum tax on businesses in Belgium. We compared the effects of a minimum tax based on assets with those of a minimum tax based on income. The idea behind the simulation of an income based AMT is to allow a comparison of the current tax with a simpler, fairer, more efficient tax design for a corporate income tax. For the asset based AMT we tested various design options, for a given revenue target, in terms of their impact on firms of various types and in various sectors of various tax designs under a simplified tax system initially introduced as an AMT in the transition to a real tax reform. The idea in this case is more to illustrate what a transitional tax based on a simple tax base could deliver while the government works on building the support needed to adopt a simpler, broader based income tax at a lower statutory rate but yet capable of generating a revenue close to the revenue observed on average in the EU.

The main results validate some reasonable expectations and provide some new insights as well. The most expected result is that indeed an AMT can be counted on to generate additional revenue and that this additional revenue will come at the cost of an increase in the average ETR. The current ETR is 15.7%. For a 1% of GDP increase in revenue, the ETR of an income based AMT would increase to 24.3%. For an asset based AMT, it would roughly double for the asset base most likely to be politically acceptable (total assets minus long term liabilities). The higher the revenue increase needed, the higher the associated increase in ETR.

Among the other expected results, five are worth mentioning. The first is that trying to protect firms who have an ETR of 0 under the current system has an obvious cost. It increases the rates of the AMT needed to generate the revenue target since it is imposed on a narrow base. This would fail to bring back into the tax net the firms who rely on tax loopholes not to pay any tax under the current system. The second is that deciding to include those firms in the AMT base would reduce the required rate under all tax designs, but it would include all the firms with real losses as well rather than only those with losses generated by creative tax accounting. The third is that deciding to rely on an asset base rather than an income base for the AMT will penalize relatively more capital intensive firms. The distortion can be mitigated by refining the definition of the assets (e.g. distinguishing between gross or net assets) but it cannot be eliminated. The fourth is that relying on net asset bases ends up favouring higher leveraging in the financing strategies of the firm since increasing various types of debt is the most obvious way of increasing liabilities. The fifth is that not all sectors are equally impacted by the AMTs. The hardest hit would be agriculture, forestry and fishing, public administration and defence, residential care and social work activities

Among the less expected results, the following stand out. First, the highest increase in the ETR is associated with a broad asset based AMT. If the government decided to continue to protect firms with zero profit under the current system, the ETR would be over 36% which would penalize the competitiveness of many of the firms currently paying taxes. Not protecting the firms currently exempted for some reason would lead to ETRs in the low 20s, no matter what the tax base is for the AMT. This would all be realistic from a competitiveness and probably political perspective. Second, except for the broad income based AMT, all AMT design tested increase the dispersion of ETRs across sectors—as much as 11 times in the case of an AMT based on total assets. The impact is stronger, the stronger the protection of firms currently not paying taxes. Third, if the AMT focus is on an asset base, the simulations suggest that it would require a relatively low rate. A maximum rate of 0.58% is needed on net assets if 1% of GDP is the revenue target and all firms are subject to the tax (0.31% if the revenue target is 0.5% of GDP). The total asset minus long term (LT) liability demands a relatively low tax rate of 0.21% for a 0.5% increase in revenue. It only increases the dispersion of ETRs by 50% for an increase in the average ETR from



15.7% to 19% for the country. If the revenue target is 1% of GDP, the tax rate for this tax base would be 0.88% of the firms protected today continue to be protected and 0.39% otherwise. Fourth, the large and very large firms would be the hardest hit by the asset based AMTs. Small firms would be the least impacted. An income base AMT would not introduce significant distortions according to size. Fifth, the specific design of the tax significantly impacts the total number of firms that ends up being subject to the AMT rather than the regular income tax. Three out of four asset based AMTs allow to reach 98~100% of the companies, a significant increase in light of the fact that only 69% of the firms currently pay an income tax. In the cases, at least 40% would end up being subject to the AMT rather than the regular income tax.

Overall, these results suggest is that there are good reasons why some in government like the idea of an AMT and why many firms are concerned with the idea. The simulations show that with an ETR of less than 16%, with less than 70% of the firms actually paying tax and with significant biases that favour very large firms, policymakers have good reasons to argue that it is time to take action. They do show, however, that the fairer of all solutions could simply be to start the corporate income tax from scratch as illustrated by the simulations for the income based AMT. If for some reason, this is not possible, an AMT based on gross assets minus long term liabilities would seem to be a second best option to buy time and generate revenue. It should be clear however that this option would also result in an increased dispersion of ETRs driven by asset size rather than by profit levels.

In a nutshell, what the paper suggests is that getting the income based tax right now rather than later is the dominating strategy from a revenue, efficiency, equity and administrative viewpoint. If that is not possible, one option is to introduce the ideal profit tax as an AMT and over time, this AMT could end up replacing the current income tax. If that in turn is not possible, the simulations clearly show that having to increase revenue through an asset base AMT would lead to an increase in distortions. This joint increase in revenue and distortion would have very little correlation to what would make the taxation of profits efficient and fair for a given revenue target. This is why this option should clearly be a transitional solution to buy time to fix the corporate income tax system and nothing else. The final choice will obviously be political but at least, it should be a bit more informed now (accounting for the limitations of our data) and certainly more transparent.

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