ESSAYS ON THE COMMON CONSOLIDATED CORPORATE TAX BASE

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NEDERLANDSTALIGE SAMENVATTING

Europese ondernemingen ondervinden heel wat fiscale belemmeringen wanneer ze grensoverschrijdend actief zijn binnen de EU. Zo worden ondernemingen geconfronteerd met hoge administratieve kosten en opvolgingskosten ten gevolge van het naast elkaar bestaan van 28 verschillende nationale vennootschapsbelastingsystemen. Daarnaast bestaan er heel wat beperkingen op grensoverschrijdende verliescompensatie. Slechts een beperkt aantal EU-lidstaten laat toe dat grensoverschrijdende verliezen binnen een ondernemingsgroep gecompenseerd worden. Dit zorgt ervoor dat ondernemingen vaak overbelast worden. De hoog oplopende kosten als gevolg van de strenge documentatieplicht rond interne verrekenprijzen vormt een andere hinderpaal voor ondernemingen die binnen de EU actief zijn. Ten slotte biedt het huidig netwerk van dubbel belastingverdragen onvoldoende soelaas om dubbele belasting in zijn geheel tegen te gaan. Vaak zijn deze belastingverdragen het resultaat van gemaakte afspraken tussen slechts twee lidstaten.

Om deze fiscale belemmeringen integraal aan te pakken, publiceerde de Europese Commissie een voorstel tot Richtlijn over de gemeenschappelijke geconsolideerde heffingsgrondslag voor de vennootschapsbelasting. Dit project, beter gekend onder de Engelstalige afkorting 'CCCTB', mag beschouwd worden als één van de meest ambitieuze projecten binnen het domein van de directe belastingen. Onder CCCTB wordt een uniforme set van regels toegepast voor de berekening van de belastbare basis van elke groepsentiteit. Vervolgens worden de individuele resultaten van de groepsentiteiten geconsolideerd. Consolidatie houdt o.a. in dat intra-groep transacties geëlimineerd worden en verliezen gecompenseerd. In een volgende stap wordt de geconsolideerde basis verdeeld over de verschillende groepsentiteiten volgens hun aandeel in het groepstotaal van de materiële vaste activa, omzet en arbeid, i.e. de CCCTB verdeelsleutel. Ten slotte past elke lidstaat zijn eigen belastingtarief toe op de aanwezige belastbare basis in die lidstaat. De CCCTB beoogt dus geen harmonisering van het vennootschapsbelastingtarief.

Ondanks het belang van dit Europees project, is onderzoek naar CCCTB eerder beperkt. Dit proefschrift draagt bij tot de academische literatuur op drie manieren. 1) Er wordt tegemoetgekomen aan de beperkingen van studies die de economische impact van een CCTB simuleren. 2) Nieuwe inzichten worden toegevoegd aan studies die de verdeelsleutel beoordelen vanuit het standpunt van fairness. 3) Er wordt bijgedragen tot een nieuwe stroom van literatuur die de politieke standpunten rond CCCTB belicht.

De eerste studie onderzoekt in welke mate de effectieve belastingdruk voor een gemiddelde Belgische onderneming onder CCTB, i.e. een CCCTB zonder consolidatie, verschilt van de effectieve belastingdruk onder het Belgisch vennootschapsbelastingsysteem. Hiervoor werd gebruik gemaakt van de European Tax Analyzer, een tool die de waarde van de gemiddelde onderneming simuleert over een toekomstige periode van tien jaar. De resultaten tonen aan dat onder CCTB de effectieve belastingdruk voor een gemiddelde grote onderneming zou toenemen met 16% en voor een gemiddelde KMO met 14%. Deze stijging in belastingdruk valt grotendeels te verklaren door het verbod op de notionele intrestaftrek onder CCTB.

De tweede studie bestudeert of de factoren die opgenomen zijn in verdeelsleutel fair zijn. Meer bepaald wordt nagegaan of de allocatiefactoren 'materiële vaste activa', 'omzet' en 'arbeid' beschouwd kunnen worden als winst generende factoren van de onderneming. Daarnaast gaat de studie dieper in op de mogelijke rol van immateriële vaste activa. In de huidige samenleving neemt het belang van immateriële activa immers steeds toe. De resultaten tonen aan dat materiele vaste activa, omzet en arbeid de variatie in winst voor slechts 28% verklaren. Worden de immateriële vaste activa op de balans opgenomen, dan neemt de verklaringskracht van het model niet toe. Echter, voor een steekproef van R&D intensieve ondernemingen, draagt de marktpremie van het eigen vermogen significant bij tot de verklaring van winst. Dit resultaat suggereert dat niet-uitgedrukte immateriële vaste activa een belangrijke rol spelen bij de creatie van winst.

De derde studie analyseert de standpunten van Belgische politici over CCCTB in het Belgisch Parlement (BP), het Europees Parlement (EP) en de Raad van Ministers (RM). Gebruikmakend van case studie methodologie, tonen de bevindingen aan dat het merendeel van de Belgische politici voorstander is van CCCTB. Bij de argumentatie tijdens de debatten in het BP, EP en de RM werd uitvoerig verwezen naar de macro-economische impact en rechtszekerheid van CCCTB alsook naar de partij ideologie m.b.t. dit nieuwe taks systeem. Ondanks de consensus over verschillende aspecten van CCCTB, was er een duidelijke links-rechts tegenstelling over de gewenste reikwijdte van een harmonisering van de vennootschapsbelasting in Europa.

EXECUTIVE SUMMARY

European companies are faced with several tax obstacles which hamper cross-border investments in the EU. One such obstacle relates to the high administrative burdens and tax compliance costs multinationals face because of the different corporate tax systems that exist across the 28 Member States (MS). Another obstacle concerns the limitation on cross-border loss relief. Only a limited number of countries within the EU allows loss offset within a group, which leads to over-taxation for companies engaged in cross-border activities. A third obstacle involves the high costs of complying with transfer pricing formalities in accordance with the arm's length principle. In addition, applying transfer pricing may facilitate intra-company profit shifting. A final obstacle relates to the problem of double taxation as a result of conflicting taxing rights between MS. The network of Double Tax Conventions does not offer a sufficient solution as it is designed to operate in a bilateral context instead of an integrated setting.

To tackle these problems in a comprehensive way, the European Commission published a proposal for a Council Directive on a Common Consolidated Corporate Tax Base (EC, 2011), which can be considered as one of the most ambitious projects in the history of direct taxation within the EU. The Common Consolidated Corporate Tax Base, better known as the 'CCCTB', provides companies that operate within the EU a single set of rules to determine their taxable profit instead of the different rules that exist in each Member State today. Moreover, groups would consolidate their taxable profits and allocate them to the individual companies by means of an apportionment formula. Further, each Member State would have the right to apply its own tax rate to the specific share of the overall tax base.

Despite the importance of this project, research on CCCTB is rather limited. This dissertation contributes to the literature by filling the gaps of (1) studies assessing the economic impact of the common tax base, by shedding a new light on (2) studies evaluating the apportionment formula from a fairness point of view and by elaborating on (3) an emerging area of research concerning the political view of CCCTB.

The first study examines to what extent the effective tax burden for an average Belgian company under a Common Corporate Tax Base (CCTB) would differ with its effective tax burden under the Belgian corporate tax system. To address this research question, the European Tax Analyzer was used to simulate the value of the average company over a ten year period. The results show that the adoption of a CCTB would increase the Belgian tax burden by 16% for an average large company and by 14% for an average SME. The increase in tax burden is mainly driven by the fact that Belgian companies would not be allowed to apply the notional interest deduction under CCTB.

The second study investigates the fairness of the European proposed allocation factors, i.e. to what extent they represent profit generating activities. Additionally, the profit generating capacity of the alternative factor intangible assets is discussed and analysed. Nowadays, intangible assets represent an important and growing component of the total capital stock. The results reveal that the European proposed allocation factors fixed tangible assets, labour and sales explain only 28% of the variation in profit. Adding intangible assets, as extracted from the balance sheets, does not increase the explanatory power of the model. However, for a sample of R&D intensive companies, the market premium of equity significantly raises the explanatory power. So, unrecognized intangibles tend to be important in explaining profit.

The third study focuses on the views of Belgian politicians on CCCTB in the Belgian Parliament, the European Parliament and the Council. Applying case study methodology, the findings show that a big majority of the Belgian politicians were proponents of CCCTB. During the discussions in each of the political institutions, the politicians referred to the macro-economic impact of CCCTB, the legal certainty of CCCTB as well as the party's view to underpin their opinion. Besides several similarities, the implications of harmonization and the optionality of CCCTB involved clear differences in view between left and right parties. As Belgium is a likely candidate for introducing CCCTB, the findings of this research are valuable to other EU-countries.

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CHAPTER 1:

INTRODUCTION

'The Common Consolidated Corporate Tax Base: an instance of the EU's Icarus complex[1]?' (IREF, 2011) and 'CCCTB - is it a dream or a mirage?' (Dodwell, 2008) are only two examples of the many article headings which consider the European Commission's proposed Common Consolidated Corporate Tax Base as the most ambitious project in the history of direct taxation within the EU. The Common Consolidated Corporate Tax Base, better known as the 'CCCTB', provides companies that operate within the EU a single set of rules to determine their taxable profit instead of the different rules that exist in each Member State today. Additionally, groups would consolidate their taxable profits and allocate them to the individual companies by means of an apportionment formula. Further, each Member State would have the right to apply its own tax rate to the specific share of the overall tax base (EC, 2011).

This dissertation contains three papers that investigate different aspects of CCCTB. Before discussing the topic, methodology, findings and contribution of each paper, it will be first explained what the CCCTB project stands for. As a detailed technical discussion of each aspect of the CCCTB would be too far-reaching, only the principles which are essential to understand the content of this dissertation will be described.

1.1 What is the Common Consolidated Corporate Tax Base (CCCTB)?

1.1.1 Background

In October 2001, the European Commission (EC) published the report 'Company Taxation in the Internal market' (EC, 2001). According to this report, European companies are faced with several tax obstacles which hamper cross-border investments in the EU. One such obstacle relates to the high administrative burdens and tax compliance costs multinationals face because of the different corporate tax systems that exist across the 28 Member States (MS). Another obstacle concerns the limitation on cross-border loss relief. Only a limited number of countries within the EU allows loss offset within a group, which leads to over-taxation for companies engaged in cross-border activities. A third obstacle involves the high costs of complying with transfer pricing formalities in accordance with the arm's length principle, i.e. 'intercompany transactions should be established by reference to the conditions which would have been obtained between independent enterprises in comparable transactions and

[1] Remember that in the Greek mythology, Icarus tries to escape from Crete by means of wings that his father constructed from feathers and wax. Icarus ignores his fathers' construction not to fly too close to the sun and the melting wax causes him to fall into the sea. The fall of Icarus symbolizes the danger of excessive pride.

comparable circumstances' (OECD, 2009, § 1.6). In addition, applying transfer pricing may facilitate intra-company profit shifting, which raises the question if this system is the most appropriate one for the allocation of profit. A final obstacle relates to the problem of double taxation as a result of conflicting taxing rights between MS. The network of Double Tax Conventions (DTCs) does not offer a sufficient solution as it is designed to operate in a bilateral context instead of an integrated setting (EC, 2011).

The publication of the Company Taxation report in 2001 and the informal ECOFIN meeting about CCCTB in September 2004, inspired the European Commission (EC) to establish a Common Consolidated Corporate Tax Base. The Commission believes that a CCCTB would be the most comprehensive solution to remove the underlying causes of the tax obstacles hampering cross-border investments in the EU. An important step in the development of a CCCTB was the creation of a CCCTB Working Group (CCCTB WG) in 2004, which consists of experts from the tax administrations of all MS. Until April 2008, the CCCTB WG met thirteen times with the aim to 'examine and discuss, from a technical perspective, all implementation issues of a common consolidated tax base for companies operating in the EU' (EC, 2004). In addition, six sub-groups were established to study specific topics in more depth. Further, several meetings were held to allow other stakeholders from the business and academic world to express their views. On 16 March 2011, the EC published the long expected proposal for a Council Directive on a Common Consolidated Corporate Tax Base which was based on the preparing documents of the CCCTB WG. Together with the proposal, the EC also published an economic impact assessment of the CCCTB (EC, 2011).

1.1.2 Main principles

Scope

In order to apply the CCCTB system, i.e. to be an 'eligible' company, a company must have a qualifying corporate form like a public or private limited company (all qualifying forms are listed in Annex I of the proposal) and be subject to the corporate tax of an EU MS (listed in Annex II of the proposal) (EC, 2011, Art. 2). As there is no condition regarding size, eligible companies can range from small and medium-sized companies to large companies. According to the proposal, CCCTB will be an optional system, i.e. corporate groups[2] may choose between the CCCTB and the existing national corporate tax system (EC, 2011, Art. 6). By consequence, countries will have to administer two corporate tax systems. The optionality, however, would include an 'all-in or all-out' treatment, which ensures that all group members must join the regime for at least five tax years if the group decides to apply for it (EC, 2011, Art. 105). In the proposal, the 'group' concept is defined as it is important to determine which companies have to apply CCCTB and consolidate their results once the

[2] Stand-alone companies can also choose for CCCTB. In that case, the stand-alone company applies the common tax base rules to determine its taxable profit instead of the national rules.

choice is made. In particular, a resident taxpayer forms a group with all its EU qualifying subsidiaries, all EU permanent establishments and EU sister companies[3] (EC, 2011, Art. 55). Qualifying subsidiaries should be determined in accordance with a two-part test based on 'control', i.e. more than 50% of the voting rights, and 'ownership', i.e. more than 75% of the company's capital or profit entitlement rights (EC, 2011, Art. 54).

Step 1: Common Tax Base

Once the CCCTB group has been formed, three distinct steps can be distinguished to determine the tax liabilities for each group member. In a first step, each group member has to calculate its individual taxable profit according to a uniform set of rules, i.e. the common tax base. In the proposal, a 'profit and loss' approach is applied as the tax base is calculated as all revenues less exempt revenues, less deductible expenses and other deductible items (EC, 2011, Art. 10). Taxable revenues are broadly defined and include all active and passive income, except if listed as exempt. According to the proposal, exempt revenues include (a) subsidies linked to fixed assets subject to depreciation, (b) proceeds from the disposal of pooled assets, (c) received profit distributions, (d) proceeds from the disposal of shares and (e) income of a permanent establishment in a third country (EC, 2011, Art. 11). Deductible expenses involve all costs of sales and expenses incurred by the taxpayer with the view to obtaining or securing income, including costs of raising capital. Under CCCTB all costs relating to research and development (R&D) are deductible (EC, 2011, Art. 12). The deduction of R&D is in line with the shift to more growth-friendly and green taxation in the Europe 2020 strategy (EC, 2014). Further, the proposal lists ten expenses that are treated as non-deductible like profit distributions and repayments of equity or debt (EC, 2011, Art. 14). Concerning the depreciation of fixed assets, the proposal distinguishes between individually depreciable fixed assets and other fixed assets. In particular, long-life tangible assets and intangible fixed assets are individually depreciated while the remaining assets go into a pool (EC, 2011, Art. 36 and 39). With respect to the treatment of losses incurred by a taxpayer, these losses may be carried forward without time limit. However, no loss carry-back is allowed (EC, 2011, Art. 43).

Step 2: Consolidation

In a second step, the individual tax bases are summed up to the consolidated tax base. The proposal does not provide detailed information about the consolidation aspect. However, it mentions that all losses incurred by taxpayers will be set off against any profits generated by other members of the same group (EC, 2011, Art. 57). Further, it provides that all transactions directly carried out between the members of a group should be ignored, which avoids the need to evaluate intra-group transactions in terms of transfer pricing (EC, 2011, Art. 59). The proposal does not specify which consolidation

[3] A non-resident taxpayer with its qualifying EU subsidiaries and EU permanent establishments.

method should be applied, but entails a full consolidation as the consolidation affects the entire tax base of each group member. When consolidating, groups are required to record intra-group transactions by applying a consistent and adequately documented method. This method should enable all transactions to be identified at the lower of cost and value for tax purposes (EC, 2011, Art. 59). After consolidation, an overall profit will be allocated to the group members by means of the apportionment formula (see step 3). In case of an overall loss, i.e. when the consolidated tax base is negative, the loss will be carried forward and set off against the next consolidated tax base (EC, 2011, Art. 57).

Step 3: Apportionment and Tax Liability

In a third step, the consolidated tax base is allocated to the different group members according to their proportions in the group's total of labour, assets and sales, i.e. the so-called apportionment formula (EC, 2011, Art. 86). The labour factor is computed on the basis of payroll and the number of employees (each item counting for half) (EC, 2011, Art. 90). The asset factor consists of all tangible fixed assets, excluding intangible assets and financial assets. These items are excluded from the formula due to their mobile nature and practical problems concerning valuation and location (EC, 2011, Art. 92). With respect to the sales factor, the proposal adopts a 'sales by destination' approach for allocating the sales to the group members. This means that sales of goods and services will be included in the sales factor of the group member located in the MS where the goods are delivered or services are carried out (EC, 2011, Art. 96). According to the Commission, the three equally weighted factors labour, assets and sales should ensure that profits are taxed where they are earned.

Important to mention is that each MS preserves the right to apply its own tax rate, meaning that the Commission does not have the intention to introduce a harmonized tax rate. The tax liability of each group member would be the outcome of the adjusted apportioned share multiplied by the national tax rate. The adjusted share of the tax base equals the apportioned share as calculated by the formula less any items deductible from the apportioned share (e.g. pre-grouping losses) and less any double taxation relief for income taxed at source (EC, 2011, Art. 103).

Further, under CCCTB groups of companies would be able to use a 'one-stop-shop' system, i.e. they could file a single consolidated tax return for all their activities in the EU with the principal tax authority. The principal tax authority would be the tax authority of the member state in which the parent company of the group (the 'principal taxpayer') would be resident for tax purposes (EC, 2011, Art. 109).

International aspects

Concerning the international aspects of CCCTB, the proposal is silent on how to deal with contradictions between the CCCTB rules and double tax agreements of MS with third countries.

However, this question should be resolved when introducing CCCTB. The proposal mentions that income from a permanent establishment in a third country, proceeds from the disposal of shares and 'inbound' profit distributions, i.e. received dividends from an EU company outside the taxpayer's group or from a company in a third company, are generally exempt under the CCCTB system (EC, 2011, Art. 11). In contrast, relief by credit[4] is granted for received interests and royalty payments and this credit is allocated to the group members by the apportionment formula (EC, 2011, Art. 76). Withholding taxes that are charged by a taxpayer on 'outbound'[5] interests and royalties, will be shared among the MS according to the formula. There is no equivalent provision in the proposal for withholding taxes charged on dividends (EC, 2011, Art. 77). As regards transactions with related[6] companies in the EU or in a third country, these transactions will be subject to pricing adjustments in line with the arm's length principle (EC, 2011, Art. 78).

Anti-abuse rules

The CCCTB proposal lays down a general anti-avoidance rule (GAAR) to combat abuse and some specific anti-avoidance rules to target identified problems. The GAAR declares that 'artificial transactions for the sole purpose of avoiding taxation shall be ignored for the purposes of calculating the tax base' (EC, 2011, Art. 80). By formulating the 'sole purpose', the Commission has chosen for a rather narrowly based rule. Moreover, a number of specific anti-abuse rules are provided in the proposal of which one relates to the disallowance of interest deductions. In particular, interests paid to an associated company in a third country will not be deductible if there is no qualifying information exchange agreement and one of two other conditions are met, namely (a) the statutory tax rate in the third country is lower than 40% of the average statutory rate in the EU, or (b) a special regime applies that provides for a substantially lower level of taxation than the general regime (EC, 2011, Art. 81).

1.2 Motivation and overview of dissertation papers

In general, the topic of CCCTB has received little attention from stakeholders like the business community, national governments and academics. Concerning the business community, explanations about CCCTB in the press are rare. Nevertheless, a few European business organizations[7] stressed the

[4] Under the exemption method the country of residence exempts the received income of the source country. Under the credit method both countries tax the income, but the country of residence grants a credit for the tax paid in the source country.

[5] i.e. interests and royalties paid to a recipient outside the group.

[6] According to Art. 78, a company is related or associated to another company if a taxpayer participates directly or indirectly in the management, control (i.e. more than 20% of voting rights) or capital (i.e. more than 20% of capital) of a non-taxpayer, or a taxpayer which is not in the same group.

[7] European business organizations like Business Europe, Eurochambres and UEAPME were part in some of the CCCTB Working Group meetings, for example at the Workshop on the CCCTB on 20 October 2010 (EC, 2010)

importance that CCCTB should be optional, allow for the consolidation of profit and losses and reduce compliance costs (de Buck, 2011). With respect to national governments, very few of them – mainly opponents of the system - expressed their views about CCCTB. In a letter to the President of the Dutch Upper Chamber, the Dutch Minister of Finance wrote that the Dutch government is very critical about CCCTB as the EC's impact assessment showed that the introduction of the system would reduce corporate tax revenues and have a negative impact on the Dutch economy in terms of GDP and investments (Dutch Department of Finance, 2011). CCCTB also received relatively little attention from the academic world. The literature about CCCTB is not that extensive and can be attributed to only a handful of countries. Among these countries, the literature is almost exclusively of German origin (e.g. Fuest, 2008; Becker and Fuest, 2010; Dietrich and Kiesewetter, 2011; Oestreicher and Koch, 2011; Runkel and Schjelderup, 2011; Spengel et al., 2012). A few exceptions of CCCTB research in other countries are Martini et al. (2012) and Eberhartinger and Petutschnig (2014) from Austria, Bettendorf et al. (2010a, 2010b) from the Netherlands, Nielsen et al. (2010) from Denmark and Hellerstein and McLure (2004) and Hines (2010) from the US.

The literature on CCCTB can be divided into two broad categories. A first category of research focuses on the *macro-economic impact* of CCCTB. Some studies exclusively assess the corporate tax revenue impact of introducing CCCTB (e.g. Devereux and Loretz, 2008; Nielsen et al., 2010; Oestreicher and Koch, 2011; Domonkos et al., 2013), while other studies also consider the effect on welfare, GDP or employment (e.g. Eichner and Runkel, 2008; Bettendorf et al., 2010b; Runkel and Schjelderup, 2011). Theoretical predictions on the aggregate EU impact of CCCTB are mixed and the empirical evidence in this regard is inclusive as well. The variation of effects across countries, however, is generally large and highly depends on the choice of the allocation factors. Further, the divergent results of the impact studies could be attributed to different parameters and assumptions underlying the models like the choice of an optional or mandatory CCCTB or a static versus behavioural approach.

A second category of research focuses on the *apportionment formula* of CCCTB from *a firm-level* perspective. In particular, these studies investigate how the apportionment formula would influence the behaviour of companies in terms of minimizing their taxes. In general, these studies show that the apportionment formula would not prevent companies from shifting their profits to low tax member states (e.g. Riedel, 2010; Buettner et al., 2011; Dietrich and Kiesewetter, 2011; Martini et al., 2012; Eberhartinger and Petutschnig, 2014; Kiesewetter et al., 2014; Martini et al., 2014). For example, Kiesewetter et al. (2014) show that the apportionment formula would introduce new forms of tax planning like the manipulation of the book value of assets. Another example is the study of Martini et al. (2014) which shows that the payroll apportionment factor would distort the level and composition of managerial compensation. Also related to the payroll apportionment factor, Riedel et al. (2010) find

that a 1-percentage-point increase in the tax rate differential between an affiliate and its foreign group members would lower the affiliate's payroll to capital ratio by 1.9%.

This dissertation contributes to these streams of literature in several ways. First, by using *empirical data* this dissertation offers a counterweight to the dominant theoretical models which are used for examining CCCTB. Second, this dissertation adds to the impact assessment literature. Current research has primarily focused on the economic impact of a full CCCTB, i.e. a common corporate tax base with consolidation and apportionment. However, as the EC proposal lacks clarity about the technical details of consolidation and apportionment, a less-far reaching and therefore more achievable approach would be the introduction of a Common Corporate Tax Base (CCTB). The first paper of this dissertation assesses the *impact of CCTB* for Belgian companies. Third, this dissertation contributes to the apportionment formula literature. Current literature mainly evaluated the apportionment formula from an 'efficiency' point of view, i.e. how the formula would influence companies behaviour' in terms of minimizing their taxes. The second paper of this dissertation, however, approaches the *formula* from *a 'fairness' point of view*, i.e. to what extent the proposed allocation factors in the formula actually reflect profit generating activities of companies. Fourth, this dissertation puts a new research perspective on CCCTB. In particular, the third paper of this dissertation analyses the Belgian *political view* about CCCTB in the Belgian Parliament, the European P arliament as well as the Council. In the current literature, studies dealing with the political view of CCCTB are lacking. Finally, the results of the three dissertation papers indicate that, at least in the short term, a CCTB without consolidation would be a more achievable approach than a CCCTB.

In what follows, the topic, methodology, findings and contributions of the three papers separately will be presented.

1.2.1 Impact of a Common Corporate Tax Base on the effective tax burden in Belgium

Principal Topic

There are mainly three major arguments to prefer a CCTB without consolidation and apportionment above the full package of CCCTB. First, the published EC documents lack clarity about the technical details of consolidation and apportionment. Second, the member states' political support for the second and third steps of CCCTB are low (Herzig and Kuhr, 2011). Third, literature has shown that profit-shifting by transfer pricing would to some extent be substituted by profit-shifting via manipulation of the apportionment factors (e.g. Nielsen et al., 2010). For these reasons several authors have argued in favour of the system of a CCTB (Haverals, 2007; Spengel et al., 2012). Using the European Tax Analyzer (ETA), Spengel et al. (2012) study the impact of a Common Corporate Tax Base (CCTB) in Europe. On an EU-27 average, the effective tax burden would remain largely unchanged (-0.06%). From a Belgian perspective, an interesting research question is the extent to which the effective tax burden for an average company would differ under CCTB compared to the

Belgian corporate tax system. This paper answers this research question by focusing on the impact of a CCTB for Belgian companies in particular.

Data and Methodology

The neo-classical approach of Devereux and Griffith (2003), extending the King and Fullerton (1984) methodology, can be seen as the standard model for the calculation of the effective average tax burden. However, approaches based on the neo-classical theory generally focus on the identification and explanation of tax incentives on rational, i.e. tax minimizing agents. A detailed analysis of existing tax regimes and possible tax reforms in terms of implications of tax burden is not feasible (Finke et al., 2013*)*. The European Tax Analyzer (ETA), developed by the Centre for European Economic Research and the University of Mannheim (Spengel and Oestreicher, 2012), is a micro-simulation model which overcomes this limitation. The ETA allows for a detailed assessment of all major elements forming the corporate tax base and sets up an explicit link between financial accounting and tax accounting. The ETA calculates and compares effective average tax burdens for companies located in one of the EU-27 member states. The absolute effective average tax burden is derived from simulating the development of an average company over a 10 year period and is defined as the difference between the pre-tax value and the post-tax value of the firm at the end of the simulation period. The model uses empirical data, taken from the Amadeus database to form one large and one small or medium-sized (SME) EU-27 average company.

Findings

The results show that the adoption of the proposed CCTB would remarkably increase the Belgian tax burden by 16%. This finding is mainly driven by the fact that Belgian companies are not allowed to apply the notional interest deduction under CCTB. In addition, the CCTB applies less favourable depreciation and inventory valuation methods compared with the Belgian tax system. When varying the economic model assumptions, the general finding of an increased tax burden under CCCTB always applies. However, the biggest differences in tax burden occur when the company is characterized by low profitability, high capital intensity and high equity.

Contribution

This research contributes to the existing literature in two ways. First, contrary to the previous literature (Spengel et al., 2012), this paper focuses on the impact of a CCTB on the effective tax burden for Belgian companies in particular. Specifically, the effective tax burden under CCTB is compared with the tax burden under the Belgian tax system. Moreover, the isolated impact of the implemented tax measures is investigated. In order to do this, the latest version of the ETA is extended taking into account the Belgian tax measures stimulating R&D like the investment deduction or tax credit for patents. Also, particular measures for SMEs like the increased percentage for notional interest deduction and the reduced tax rates are implemented. As regards CCTB, all rules as recently proposed

in the CCCTB directive (March 16th 2011) are applied. Second, this paper contributes to the existing literature by studying under which conditions the CCTB could be an attractive choice for Belgian companies and by including policy recommendations that could be relevant for other European countries.

1.2.2 An empirical investigation into the design of an EU apportionment formula related to profit generating factors

Principal Topic

In the context of an apportionment formula, the 'equity' principle asks for a fair distribution of the common tax base among the different group members. A fair distribution would mean that the allocation of the consolidated tax base is closely related to the profit generating factors of the underlying entities (Hellerstein, 2005; Agundez-Garcia, 2006). The Commission supposes that fixed tangible assets, sales and labour are the dominant factors in the generation of profit and therefore believes that these factors are potentially fair factors to be included into the EU apportionment formula (EC, 2011). However, from a fairness point of view the choice of these factors remains an important subject of discussion in the literature as well as among policymakers (e.g. Hines, 2010). This paper investigates to what extent the European proposed allocation factors represent profit generating activities. Moreover, this paper analyses and discusses the profit generating capacity of the alternative factor intangible assets, which can nowadays be seen as an important key success factor of the modern company.

Data and Methodology

In order to answer these research questions, firm-level data from the Amadeus database are collected for the manufacturing and service sectors in the year 2008. This paper considers the unconsolidated statements of non-listed companies registered in one of the 27 EU member states. A final sample of 12,027 companies is retained, containing complete information on the dependent and independent variables. In a first part, it is analysed to what extent the allocation factors as proposed by the EC represent profit generating activities. In particular, the paper analyses the standardized beta coefficients, R^2 statistics and the predictions errors of the regressions including profit before tax as dependent variable and the allocation factors sales, assets, cost of employees and number of employees as independent variables. In a second part, it is analysed to what extent the alternative factor intangible assets represents profit generating activities. In order to do this, recognized intangible assets as extracted from the balance sheets are used. However, to account for unrecognized intangible assets, an additional sample of listed companies is formed for which the market less book value of equity is used as a proxy.

Findings

The main results show that the European proposed allocation factors fixed tangible assets, labour and sales only explain 28% of the variation in profit. Further, the results indicate that the demand factor sales is the dominant factor in explaining profit and cost of employees is the most accurate labour factor. Adding intangible assets, as extracted from the balance sheets, play a rather minor role in the generation of profit. However, the market less book value as a proxy for unrecognized intangibles tends to be important in explaining profit.

Contribution

Previous literature already focused on the fairness of an apportionment formula to allocate the consolidated tax base (Henszey and Koot, 1983; Hreha and Silhan, 1986; Schmidt, 1986; Sheffrin and Fulcher, 1984). In a more recent study, Hines (2010) shows that the proposed formula does a poor job in allocating the consolidated tax base in a fair way. The current literature mainly focuses on the allocation factors of large companies without taking SMEs into consideration. However, CCCTB will be available for all sizes of companies. The system would especially benefit SMEs as they would incur less compliance costs when they decide to expand their activities across the EU (EC, 2011). Also, the current literature does not contain any empirical research on the potential role of alternative factors in the allocation of the common tax base. This paper contributes to the literature by filling these gaps. Using European firm level data, it is first investigated to what extent the European proposed allocation factors represent profit generating activities when taking into account all sizes of companies. This paper also analyses and discusses the profit generating capacity of the alternative factor intangible assets, which represent an important and growing component of total capital stock (Hellerstein 2005; Hulten and Hao 2008; Corrado et al. 2009).

1.2.3 What do politicians think of the Common Consolidated Corporate Tax Base? A Belgian case study

Principal Topic

Since the launch of CCCTB in March 2011, some remarkable developments took place at the political level. Shortly after the publication of the CCCTB proposal, all national parliaments had the right to assess whether the CCCTB proposal complied with the general principles of subsidiarity and proportionality. On 19 April 2012, the Members of the European Parliament (MEPs) voted on the EC's proposal for a CCCTB. At present, the EC proposal is negotiated in the Council which has final decision power on the introduction of a CCCTB. This paper describes and discusses the views of Belgian politicians on CCCTB in the Belgian Parliament, the European Parliament and the Council of the European Union. Moreover, it is examined to what extent and how Belgian politicians used macro-economic, legal or ideological arguments to found their opinion about CCCTB.

Data and Methodology

A case study approach was chosen to produce more detailed information on this topic. Namely, to describe the political view in relation to the macro-economic, ideological and legal perspectives, the use of a case study would be more opportune in terms of gaining insights into this relationship (Yin, 2003). Further, Belgium was chosen as it is a representative case for open and small economies within the EU (Abraham, 1995). Additionally, Belgium is a plausible candidate for the procedure of 'enhanced cooperation' where a minimum number of nine member states would introduce CCCTB (Belgian Chamber of Representatives, 2011). This case study employs an embedded design (Yin, 2003) as three levels of analysis are involved. In particular, the Belgian position is discussed at the level of the politician, the party level and at the country level. Finally, to enhance the reliability of the findings, multiple sources of data were obtained and analysed.

Findings

In general, the findings show that a big majority of Belgian politicians were proponents of CCCTB. During the discussions in each of the political institutions, the politicians referred to the macro-economic impact of CCCTB, the legal enforcement of CCCTB and the party's view to underpin their opinion about CCCTB. Several discussions items like the optionality of CCCTB reappeared and only slightly differed in form and content.

Contribution

This research paper contributes to the literature in three ways. First, this paper adds to the political view about CCCTB. Studies focussing on the political view in one particular country are lacking. Second, this paper applies the case study methodology, which is only exceptionally used in the CCCTB literature. In this paper, however, the use of case study methodology was more suitable as CCCTB implies a complex political process of negotiations at several levels. Third, this paper combines insights from the economic (e.g. Oestreicher and Koch, 2011), tax law (e.g. Lang et al., 2013) and political science literature (e.g. Aspinwall, 2002) to investigate how Belgian politicians were influenced by the predicted macro-economic impact of CCCTB, the legal enforcement of CCCTB and their party's ideology.

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CHAPTER 2:

IMPACT OF A COMMON CORPORATE TAX BASE ON THE EFFECTIVE TAX BURDEN IN BELGIUM[8]

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Abstract

In March 2011, the European Commission (EC) launched a proposal for a Common Consolidated Corporate Tax Base (CCCTB). However, a Common Corporate Tax Base (CCTB), leaving consolidation and apportionment out of consideration, appears to be a more realistic proposition for corporate tax harmonization in Europe. Using the European Tax Analyzer (ETA), we simulate the impact of the CCTB on the effective tax burden in Belgium. The results show that the adoption of the CCTB increases the Belgian effective tax burden by 16%. This remarkable increase is mainly driven by the fact that national tax deductions are not allowed under CCTB. This study allows policymakers to gain insight into the size effects of certain corporate tax measures and contributes to the current discussion on corporate tax harmonization in Europe.

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2.1 Introduction

In March 2011, the European Commission (EC) launched a proposal for a Common Consolidated Corporate Tax Base (CCCTB) (EC, 2011). The goal of this optional tax system is to remove the

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underlying causes of all tax obstacles currently harming the international competitiveness of European multinationals. Multinationals, for example, face high compliance costs because of the different tax systems across the twenty-seven member states. Other tax obstacles concern the limitation on cross-border loss relief and the problems with transfer pricing for intra group transactions (EC, 2001). The tax liability of a company belonging to a CCCTB group would be determined by applying four distinct steps. Firstly, each group member has to calculate its taxable profit according to the same set of rules, i.e. the Common Corporate Tax Base (CCTB). Secondly, the individual tax bases are summed up to the consolidated tax base while taking into account the elimination of intra-group transactions and loss compensation. Thirdly, the consolidated tax base is allocated to the different group members by means of an apportionment formula. Finally, each member state has the right to apply its own tax rate to the specific share of the overall tax base (Schön et al., 2008).

The study of Bettendorf et al. (2010a) exploring the macro-economic impact of introducing a CCCTB find that the system would not yield substantial welfare gains for Europe. The variation of welfare effects across countries is large and highly depends on the design of the apportionment formula. More evidence of significant economic benefits would be required to generate a widespread support for the project (Bettendorf et al., 2010a). A less-far reaching and therefore more achievable approach would be the introduction of a CCTB. This policy option would affect the calculation of the corporate tax base by introducing a common set of tax accounting rules for all member states. At a later stage, consolidation and apportionment of the individual tax bases could be included, which transforms the CCTB into a CCCTB system. As some member states have clearly expressed scepticism about the feasibility of CCCTB, the CCTB approach appears to be a more realistic proposition for corporate tax harmonization in Europe (Oestreicher et al., 2009). In this respect, also the French-German intention to introduce a harmonized tax system could have an impact on the implementation of a CCTB in Europe[11].

Using the European Tax Analyzer (ETA), Spengel et al. (2012) simulate the impact of a CCTB on the effective tax burden of companies in all 27 EU member states. The results show that the effective tax burden would, on an EU average, remain largely unchanged (-0.06%). One of the great merits of the study of Spengel et al. (2012) is that the effective tax burden effect is measured for each of the EU member states. Moreover, this large-scale approach gives the opportunity to assess the effective tax burden for Europe as a whole. However, such an approach is very time-consuming and a limitation of this study is that it is unfeasible to address all national tax regulations in great detail. Also, the study of

[11] In a letter to European Council President Herman Van Rompuy, German Chancellor Merkel and the former French President Sarkozy revealed their intention to introduce a common corporate tax base and tax rate in 2013 (Paris, 16th August 2011).

Spengel et al. (2012) explains the most important differences between the losing and winning countries and does not have the intention to stress the tax burden effect for one country in particular.

Our research contributes to the existing literature in two ways. First, contrary to the previous literature, we focus on the impact of a CCTB on the effective tax burden for Belgian companies in particular. Specifically, we compare the effective tax burden under CCTB with the tax burden under the Belgian tax system and investigate the isolated impact of the implemented tax measures. In order to do this, we extent the latest version of the ETA taking into account the Belgian tax measures stimulating R&D. We also implement particular measures for SMEs like the increased percentage for notional interest deduction and the reduced tax rates. As regards CCTB, we apply all rules as recently proposed by the EC (EC, 2011). These rules, for example, deal with assumptions concerning depreciation and valuation of inventories. Second, we contribute to the existing literature by studying under which conditions the CCTB could be an attractive choice for Belgian companies and by including policy recommendations that could be relevant for other European countries.

In general, the results show that the adoption of the proposed CCTB remarkably increases the tax burden by 16%. This finding is mainly driven by the fact that Belgian companies are not allowed to apply the notional interest deduction under CCTB.

The rest of the paper is organized as follows. Section 2.2 provides an overview of the related literature. The research set-up and methodology are given in section 2.3. The CCTB and the Belgian tax system are described in section 2.4. Section 2.5 presents the results and discussions. Section 2.6 concludes.

2.2 Recent reforms of corporate taxation

Due to increased tax competition, statutory tax rates in Europe have declined substantially over the last two decades. In the period 2010-2012 the average nominal EU-27 corporate income tax rate fell from 23.7% to 23.5%. (EU, 2012) Using comprehensive data on corporate tax reforms in Europe since 1980, Heinemann et al. (2010) find that especially high-tax countries experienced considerable pressure to reduce corporate tax rates. Moreover, the probability for tax rate reductions is significantly higher if these countries are geographically close to low-tax countries. In order to stabilize corporate tax revenues, tax rate cuts in Europe were often financed by tax broadening policies like regulations to reduce depreciation allowances and interest deductions (Heinemann et al., 2010).

Also Belgium followed this trend. An important corporate tax reform was introduced in 2003 when the statutory tax rate was reduced from 40.17% to 33.99% (Valenduc, 2004). One of the scarce studies in Belgium concerning corporate tax reforms is that of Vandenbussche et al. (2005). The authors show that the effective tax rate for large Belgian companies steadily increased over the period 1993-2002. Especially at the end of the nineties, the effective tax rate rose substantially. Vandenbussche et al. (2005) argue that the government anticipated the large reduction in the statutory tax rate in 2003 by

widening the tax base in the years just before that reduction. Base broadening provisions like more stringent depreciation rules and the non-deductibility of regional taxes were introduced to make the reform budgetary neutral.

In spite of the important decrease of the nominal tax rate in 2003, additional reforms were introduced in the following years with the aim to spur investment and promote R&D. For example, the deduction for patent income and the deduction or tax credit for investments improving the environment were introduced in tax year 2007. Another remarkable measure in Belgium was the introduction of the allowance for corporate equity (ACE) in tax year 2006, i.e. the so-called notional interest deduction (NID). This measure allows companies to deduct from their taxable profits a fictious interest calculated on the basis of their corporate equity and tackles the fiscal discrimination between equity and debt financing (Valenduc, 2004). For a sample of Belgian SMEs, Kestens et al. (2012) find that the adoption of the NID declined the marginal tax rates from 29% to 2.9%.

Corporate tax reforms were not only introduced at the national level, but also at the European level. In October 2001, the European Commission (EC) published the report 'Company Taxation in the Internal market' (EC 2001) in which the main tax obstacles for companies were described. According to this report, two approaches could be distinguished to tackle the underlying causes of company tax obstacles. A first approach would be the application of a wide variety of targeted solutions. Examples are the right implementation of the European merger Directive and the parent subsidiary Directive. A second approach would be the introduction of a comprehensive solution. The Commission believes that, in line with the priorities set in Europe 2020, CCCTB would be the best comprehensive solution to stimulate the international competitiveness of European multinationals (EC, 2014). Eventually, in March 2011, the EC launched its long-expected proposal for a Council Directive on a CCCTB (EC, 2011).

The impact study of Devereux and Loretz (2008) find that overall tax revenues would drop by 2.5% if companies could choose to participate to CCCTB, but increase by more than 2% if companies would be forced to participate. Using German FDI data only, Fuest et al. (2007) suggest that due to cross border loss-offset the EU wide corporate tax base would shrink significantly. Small countries like Ireland and the Netherlands would lose a larger part of their tax income compared with big countries like Germany, Italy, France or Great Britain. The more recent study of Oestreicher and Koch (2011) reveals that total tax revenue would be reduced by 4.56% when CCCTB would be compulsory and by 4.65% when CCCTB would be optional. Ireland and the Netherlands would suffer the greatest losses (Oestreicher and Koch, 2011). Using a numerical computable general equilibrium (CGE) model for Europe, Bettendorf et al. (2010a) suggest that on an EU-average neither a common tax base nor a consolidation with formula apportionment would yield substantial welfare gains. However, the variation of effects across countries is large and highly depends on the choice of the apportionment formula. Bettendorf et al. (2010b) also argue that a coalition of winning countries would reduce

possible welfare gains and this could destroy the possibility of cooperation. The authors state that a coalition of similar countries in terms of size and sectors would be more feasible in achieving an agreement.

As the published EC documents lack clarity about the technical details of consolidation and apportionment, some authors have argued in favour of a CCTB (Haverals, 2007; Spengel et al., 2012). Haverals (2007) relies on the preparing documents of the EC and uses IAS/IFRS as a starting point for the development of a CCTB. The study shows that the application of IAS/IFRS in Belgium would broaden the tax burdens of companies by 3.8-14.6% depending on their sector. Using the ETA, Spengel et al. (2012) study the impact of a CCTB in Europe. However, in this study CCTB is applied according to the proposal which defines CCTB as a common set of autonomous tax accounting rules without explicit reference to IAS/IFRS. Their results show that the differences between the proposed CCTB and national accounting rules have a small impact on the tax burden. Only five countries have positive or negative changes above 2% (Cyprus, Ireland, Italy, Portugal and Romania). For Belgium, CCTB would increase the effective tax burden with 1.15%[12]. When comparing the results of Haverals (2007) with these of Spengel et al. (2012), the higher Belgian tax burden under an IFRS based CCTB can be explained by the more stringent depreciation and valuation rules compared with the EC's proposed CCTB. For example, Haverals (2007) assumes a depreciation period of 50 years for office buildings, whereas the EC's proposal mentions a period of 40 years.

2.3 Research set-up and methodology

2.3.1 Research questions

In this paper, we focus on the impact of a CCTB on the effective tax burden for Belgian companies in particular and examine the following research questions:

- To what extent does the effective tax burden for an average company differ when applying CCTB instead of the Belgian tax system?
- What is the size of the impact on the tax burden when the implemented tax rules of CCTB and the Belgian system are considered in isolation?
- How could CCTB be an attractive choice for Belgian companies if the system would be optional?

[12] Spengel et al. (2012) make an alternative calculation for Belgium, which leads to a decrease of 0.4% (-0.4%) under CCTB. This alternative calculation considers a 'rough' estimate (no corrections on equity) of the impact of the NID, but for a large company only. No other tax deductions or credits are applied. Further, it is assumed that articles 102 and 103 of the EC's proposal do not apply, which means that the NID may also be deducted under CCTB. Under CCTB, the NID then becomes more influential due to interactions between the depreciation rules and the NID. In particular, the more strict depreciation rules under CCTB lead to an increase in the profit and equity of the average company. As a consequence, a more generous NID can be applied in the next periods.

To answer these questions, we develop an extended version of the ETA in which we implement the Belgian corporate tax system including all applicable tax measures. With respect to CCTB, we apply the tax rules as recently proposed in the CCCTB directive (March 16th 2011). We consider a large and small or medium-sized company (SME), enabling us to include the Belgian tax incentives for SMEs. Additionally, a sensitivity analysis is carried out to draw general conclusions. In particular, we look how changes in economic model assumptions influence the tax burden effects of the Belgian tax system and CCTB. Specifically, we control for changes in the firm's capital intensity, profitability and capital structure.

2.3.2 Effective tax burden with ETA

In the literature, effective tax burdens at the micro level can be measured with a backward-looking or forward-looking approach. The first approach uses past accounting data from existing companies. The second approach simulates a hypothetical investment or company over its assumed life. Using historical data, a disadvantage of the first approach is that it is not appropriate to assess the effects of future tax reforms such as CCTB. In this paper, the effective tax burden was measured applying a forward-looking approach (Spengel & Lammersen, 2001).

In order to measure the forward-looking effective tax burden, the literature traditionally distinguishes between the effective *marginal* tax burden and the effective *average* tax burden. The effective marginal tax burden measures the additional tax of a marginal investment that is just worthwhile, i.e. it does not earn more than the cost of capital. The average tax burden, however, measures the effective tax burden of projects that earn more than the cost of capital, i.e. those generating positive economic rents (Fullerton, 1984). Devereux and Griffith (2003) show that the location decisions of multinationals depend on the effective *average* tax burden. A multinational would expect to earn at least the minimum cost of capital when deciding over the location of a new plant. The neo-classical approach of Devereux and Griffith (2003), extending the well-known King and Fullerton (1984) methodology, can be seen as the standard model for the calculation of the effective average tax rate. Roughly speaking, this measure can be defined as a weighted average of the effective marginal tax rate and the statutory tax rate.

However, these approaches based on the neo-classical theory have the intention to emphasize the identification and explanation of tax incentives on rational, i.e. tax minimizing agents. For example, the analyses focus on the distortions of financial and investment decisions caused by taxation. A detailed analysis of existing tax regimes and possible future tax reforms in terms of implications of tax burden is not feasible (Finke et al., 2013). Several model-firm approaches have been developed to

overcome this limitation[13]. The European Tax Analyzer (Spengel, Oestreicher 2012), developed by the Centre for European Economic Research and the University of Mannheim, is such an approach. It is the first model-firm approach which allows for a detailed assessment of all major elements forming the corporate tax base. For example, the model takes into account depreciation rules, thin capitalization rules as well as tax regulations for provisions. Thus, the ETA goes beyond prior approaches by setting up an explicit link between financial accounting and tax accounting. Having such a high degree of details, it is hardly surprising that the ETA receives results which depend on the input data and assumptions on the firm's characteristics. However, if the planning options are carefully chosen, the use of firm data is not a disadvantage of the model-firm approach. (Finke et al., 2013) Moreover, a sensitivity analysis is undertaken in order to draw general conclusions.

In what follows, we describe the working of the ETA in more detail (Spengel and Oestreicher, 2012). The ETA calculates and compares effective average tax burdens for companies located in one of the EU-27 member states. The absolute effective average tax burden is derived from simulating the development of a company over a 10 year period and is defined as the difference between the pre-tax value and the post-tax value of the firm at the end of the simulation period.

In the *first step*, the pre-tax value of the firm in period 10 is determined. This equals the sum of the estimated pre-tax cash flows and the value of net assets at the end of the simulation period. The pre-tax cash flows are based on estimates for cash receipts (e.g. sales and dividend income) and cash expenses (e.g. wages, interest expenses) in each period. Any given amount of surplus cash flow at the end of a single period can be invested at a given interest rate and any given deficit can be covered by borrowing money at a given debit rate. The value of net assets in period 10 is calculated by deducting the liabilities of the corporation from the assets. The assets and liabilities are valued at calibrated parameters that are the same in each country. Replacement prices are used for assets and nominal values for liabilities. For more details we refer to Appendix 1A.

In the *second step*, the post-tax value of the firm at the end of the simulation period is calculated. The determination of the post-tax value of the firm only has cash flow effects and no impact on the value of the net assets. So, the post-tax value is expressed as the pre-tax value of the firm minus the cash flows due to tax liabilities in each period and minus the cash flows for possible hidden reserves and liabilities[14] at the end of the simulation period. In order to determine the absolute amount of tax

[13] See Schanz and Schanz (2010) and Finke et al. (2013) for an overview of existing corporate micro-simulation models.

[14] At the end of period 10, the tax value of assets and liabilities may differ from the fair value depending on the applied tax rules. These hidden reserves and liabilities (i.e. tax book value minus replacement cost) are added to the taxable income in period 10 and taxed accordingly. Also remaining carry forwards stemming from losses, non-deductible interest or EBIT(DA) are liquidated at the end of the simulation period. A devaluation of 50% of

liabilities in each period, receipts and expenses are entered into the balance sheet and/or into the tax profit and loss account following national taxation rules or CCTB rules. After having applied the national tax rates, other relevant components such as tax credits are taken into account to calculate the amount of tax liabilities. The impact in percentage of the different elements of CCTB on the tax burden can be written as follows:

$$\text{Impact tax burden (\%)} = \frac{\left(\text{Future Value}_{\text{pretax}} - \text{Future Value}_{\text{post-tax, CCTB}}\right) - \left(\text{Future Value}_{\text{pretax}} - \text{Future Value}_{\text{post-tax, NAT GAAP}}\right)}{\left(\text{Future Value}_{\text{pretax}} - \text{Future Value}_{\text{post-tax, NAT GAAP}}\right)} \quad (1)$$

Algebraic example

The following algebraic example illustrates the methodology. For the sake of clarity, we make some simplifying assumptions[15]. We consider an identical investment 'x' with two different depreciation methods; accelerated depreciation with first-year allowance under national GAAP versus straight line depreciation under CCTB. The investment generates income receipts 'y' and 'z' over its useful life of 2 periods. Further, we assume an interest rate 'i' for cash flow available for investment and a corporate tax rate 't'.

INSERT TABLE 1 AND TABLE 2

When comparing Table 1 with Table 2, the pretax value under national GAAP equals the pretax value under CCTB as we consider an identical investment. Looking at the post-tax value, however, the tax burden (i.e. future value pretax – future value post-tax) at the end of period 2 is lower under national GAAP than under CCTB. So, the CCTB straight-line depreciation option turns out to be disadvantageous from an investment perspective and in line with equation 1 the CCTB impact on the tax burden can be written as:

$$\text{Impact tax burden (\%)} = \frac{\frac{1}{2}xi(1-t)t}{[y - x + z + 2yi - xi - yit + xit]t} \quad (2)$$

As both the numerator and denominator are positive, CCTB increases the tax burden.

its nominal value is applied if there are no restrictions for the use of carry forwards and a devaluation of 75% if there are any restrictions.

[15] We take into account a 2-period approach instead of a 10-period approach. The firm value does not consider hidden reserves or liabilities at the end of the simulation period.

Model firms and economic assumptions

The model uses empirical data, mainly taken from the Amadeus database[16] to form one large and one small or medium-sized (SME)[17] EU-27 average company. Publicly owned companies and companies with a legal form (e.g. partnerships) or industry (e.g. mining) that are not relevant are left out. Additionally, companies for which the required data are not available are excluded. Moreover, only domestic firms that are operating on a stand-alone basis[18] in each country are selected. The restriction to use domestic firm level data, does not pose any shortcoming as we focus on a CCTB, i.e. we only take into account a harmonized set of tax accounting rules and leave cross-border consolidation and loss compensation out of consideration[19]. Altogether, this brings the total number of large companies to 19,211 and SMEs to 1,128,272 (Spengel and Oestreicher, 2012).

For the determination of the EU-27 average company, we ensure that the average is not influenced by a small number of member states or large companies. Therefore, the items of the financial statements are determined in relation to the 'sales' or 'total assets' figure for each company and to determine the average for the companies in each country[20]. In summary, 'the EU-27 average company represents a model firm ignoring country and industry specific effects on pre-tax data, which means that the balance sheet, the profit and loss account and the corporate planning of this model company are given and independent from country-specific taxation rules. As a consequence, differences between pre-tax and post-tax data can be only attributed to differing tax rules in the considered countries' (Spengel and Zinn, 2011, p.499)

Appendix 1B shows the balance sheets and the financial ratios of the large company and SME at the end of year 6. They contain the different types of investments and sources of finance. Moreover, the characteristics of the model firms are revealed as expressed by some financial ratios.

[16] The determination of the EU-average company is based on update 125 as of February 2005 and refers to financial data for the years 1994 to 2004.

[17] Commission Recommendation of 6 May 2003 concerning the definition of micro, small or medium-sized companies (2003/361/EC).

[18] Amadeus provides additional ownership information. Direct shareholdings (indirect shares are not available) as well as the BvDEP independence indicator of each company were considered. The BvDEP indicator 'A' (independent) means that no shareholder of the company has a participation of more than 25%. Ultimate owners are left out of consideration.

[19] In the majority of the European countries there is no fiscal consolidation, hence the unconsolidated accounts are used to determine tax liabilities.

[20] For more details see Oestreicher et al., 2009.

2.4 Description of the Belgian tax system and the Common Corporate Tax Base

2.4.1 The Belgian tax system (tax year 2011)

In accordance with Belgian corporate tax law, the distributed as well as the retained profits are subject to income tax. These taxable profits result from the costs and revenues mentioned in the profit and loss account. The profit before tax will be subject to several adjustments in order to obtain the taxable income. In what follows, we consider the main tax adjustments taken into account in the ETA[21].

- Applying the Belgian tax code, assets have to be depreciated individually over their useful lives (pooling is not allowed). Straight line depreciation is obliged for intangible fixed assets. In the ETA, intangibles are depreciated at a rate of 20%[22]. For tangible fixed assets, double declining balance or straight line depreciation is allowed. In the ETA, the most favourable option from a tax perspective is applied. For buildings, straight line depreciation is used. Office buildings are depreciated at a depreciation rate of 3%, while factory buildings are depreciated at 5%. For machinery, factory and office equipment, the double declining balance method is used.
- The depreciation base comprises any costs connected with the construction of a fixed asset. In the ETA, only direct costs are included in the depreciation base. In Belgium, cost of R&D can be only capitalized under certain conditions. For reasons of simplicity, R&D costs are directly expensed in the ETA.
- Different valuation methods for inventories are allowed in Belgium: the LIFO method is used in the ETA, being the most favourable one from a tax perspective.
- Interest expenses are deductible from the taxable basis. However, a 7:1 debt/equity ratio applies if the creditor is exempt or taxed at a reduced rate in respect of the interest paid on the debt. Interests related to debt in excess of this ratio are considered as non-deductible business expenses. Due to computational limitations, the simulations with ETA take into account a 1:1 debt/equity ratio[23].
- Interests and royalty payments derived from a non-resident company are subject to corporate income tax. To avoid double taxation, a credit method[24] is applied for the withholding taxes paid and for the taxes paid abroad.

[21] For a complete overview of the Belgian tax rules and all its conditions we refer to the Belgian Income tax code of 1992.

[22] In the ETA intangibles only consist of patents and licenses.

[23] As the amount of debt of the average model firm does not exceed the equity more than two times (see Appendix 1B), a 7:1 deb/equity ratio could not be implemented in the ETA.

[24] With respect to these taxes paid abroad, a limited amount of the real taxes will be deducted. This amount is determined by multiplying the received gross interests with a fraction. The nominator of the fraction equals the

In addition to these adjustments, some specific tax deductions are allowed in the Belgian tax system. However, these deductions need to be applied in a fixed order and cannot lead to a fiscal loss. In what follows, we explain the deductions applied in the ETA in more detail.

- In order to avoid double taxation, the Belgian tax legislator introduced an exemption for domestic and foreign dividend income, also called the participation exemption (PE). First, the gross dividends received from subsidiaries are included in the taxable base of the parent company. Second, 95% of the amount of dividends is deducted from the taxable base. In case of insufficient taxable profit, the unused PE can be carried forward indefinitely[25].
- Since assessment year 2007, companies are allowed to deduct from their taxable profits a fictitious interest rate calculated on the basis of their corrected equity[26], i.e. the NID. With this ACE, the tax authority wants to eliminate the fiscal discrimination between financing through debt and financing through own resources. Each tax year, the NID rate is determined on the basis of the average rate for Belgian 10-year linear treasury bonds. For companies recognized as SME, this rate is increased by 0.5%. In order to get rational simulation results, the percentage for NID is in line with the long term debt assumption made in the ETA, namely 5.1% (see Appendix 1A). The unused NID can be carried forward for seven years.
- In order to create an attractive investment climate, the Belgian tax legislation allows for a deduction on innovative investments or investments improving the environment. The investment deduction reduces the taxable basis with a certain percentage of the depreciation base[27]. Due to model restrictions in the ETA, we only apply an investment deduction for patents, which is calculated as 13.5% of the depreciation base. The unused investment deduction can be carried

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percentage of taxes paid abroad, which is restricted to 15. The denominator equals 100 less the amount of the nominator.

[25] There are some requirements attached to the system of PE. Namely, the parent company has to possess the free hold of the shares as a fixed financial asset for at least one year. Moreover, the parent company has to fulfil the minimum participation in the subsidiaries' capital (at least 10% or an acquisition cost of at least € 2,500,000). Finally, the subsidiary has to meet the taxation requirements, which means that the company has to be taxed in Belgium or has to be taxed abroad in a similar way.

[26] The corrected equity starts from the book equity and applies some corrections. The book equity is increased by the changes in equity during the assessment year and is reduced by own shares and financial assets, by shares from investment companies that meet the P.E. criteria, by permanent establishments which are resident in treaty countries, by immovable assets located in treaty countries, by the amount of fixed assets that exceeds business needs, investment assets that do not generate periodical income, by revaluation gains, by investment grants and by R&D tax credits.

[27] For certain investments, the deduction can be spread in time. See the Belgian Corporate Income Tax Code 1992 for more details.

forward indefinitely. Important to mention is that companies can also choose for a patent tax credit instead of an investment deduction. This tax credit equals 33.99% of the amount of the investment deduction. The tax credit is non-refundable, but can be carried forward for four years. After this period, the unused balance can be refunded the year after.

The applied tax rate equals 33.99%, including a crisis surtax of 3%. Also reduced tax rates can be applied when the taxable profit does not exceed €322,500[28]:

Taxable income between	Tax rate applicable between these brackets
€0.01 - €25,000	24.25%
€25,001 - €90,000	31%
€90,001 - €322,500	34.50%

2.4.2 The common corporate tax base

According to the EC's proposal, CCTB would introduce an autonomous set of tax rules to determine the taxable profit of companies. In general, the rules of CCTB mainly reflect the common principles and practices in the EU. Under CCTB, no formal link is made between financial accounting (like IFRS or national GAAP) and tax accounting (EC, 2011). However, several countries like Belgium adjust the profit reported in the financial statements to determine the taxable profit (see section 2.4.1)

As opposed to the Belgian tax system, no specific tax deductions or credits are provided for in the CCTB. Article 102 of the EC's proposal lists five items (e.g. pre-grouping losses) which are deductible against the apportioned share of the consolidated tax base of each group member. No national tax deductions are included in this exhaustive list. Moreover, Article 103 states that a deduction from the tax liability, i.e. a tax credit, is only allowed for interest and royalties and any other income which have been taxed in another member state or third country.

In general, Article 10 of the EC's proposal states that, "the common tax base shall be calculated as revenues less exempt revenues, deductible expenses and other deductible items" (EC, 2011, p.22).

Concerning the simulations with ETA, we take into account the following tax rules:

- A distinction is made between long-life fixed assets with a useful life longer than or equal to 15 years and short to medium life fixed assets, with a useful life less than 15 years. Long-life fixed assets are depreciated individually on a straight-line base over their useful lives. For buildings, the depreciation rate equals 2.5%. Other long-life tangible assets are depreciated at a rate of 6.67%. Intangible assets are depreciated over the period for which the assets enjoy legal protection or for

[28] However, some corporations are excluded from the reduced tax rates. Concerning these conditions, we refer to the Belgian Corporate Income Tax Code of 1992. The SME firm in ETA meets all criteria to apply the reduced tax rates (e.g. taxable income = 131 000).

which the right is granted. If this period cannot be determined, the depreciation rate equals 6.67%. Short to medium life fixed assets are depreciated together in one asset pool at an annual rate of 25% of the depreciation base.

- The depreciation base comprises any direct costs connected with the construction of a fixed asset. All research and development costs are deductible expenses.
- Concerning the valuation of inventories, we apply the WAC in the ETA, being the most favourable one.
- In order to avoid double taxation, domestic and foreign dividend income are exempt for 95%.
- Income from interests and royalties are taxable, with a tax credit for withholding taxes paid.
- Interest expenses are generally deductible from the tax base. However, there is no deduction allowed for interests paid to associated companies resident for tax purposes in a low-tax country outside the EU, which does not exchange information. Because of technical matters, the ETA takes into account a 1:1 debt/equity ratio as TCR.

Table 3 summarizes, for the Belgian tax system and for CCTB, the above mentioned tax rules as they are applied in the ETA. Important differences concern the depreciation rules, the valuation of inventory and the Belgian tax deductions/tax credit which are not provided for under CCTB.

INSERT TABLE 3

2.5 Results

A big advantage of the ETA is that it allows for a detailed assessment of all elements determining the corporate tax base. However, it also suffers from limitations that need to be taken into account when interpreting the results. As mentioned in the previous sections, several estimates and assumptions were required to define the average model firm in the ETA, which makes the results dependent on the characteristics of the average model firm. However, a sensitivity analysis is carried out in section 2.5.3 to draw general conclusions. In particular, we control for changes in the firm's capital intensity, profitability and capital structure.

2.5.1 Belgian tax system

The base case figure in Table 4 represents the Belgian tax burden for a large company resulting from simulations using the previous version of the ETA[29]. In what follows, we give depth to the Belgian

[29] The previous version of the ETA calculates the Belgian tax burden without taking into account the NID and the investment deduction or tax credit for patents. We consider the Belgian tax burden under the previous version as our 'base case' result.

corporate tax system by implementing the NID and the investment deduction or tax credit for patents. Applying these tax measures, we can a priori expect a decrease of the Belgian tax burden. The results in Table 4 reveal the size of this decline. The implementation of the tax measures mentioned above reduces the Belgian tax burden by 12.57%. When looking at the isolated effects of the different measures, the results indicate that the decrease is mainly caused by the NID. This tax incentive leads to a reduction of 12.07%. With respect to patents, Belgian companies have to choose between investment deduction or tax credit. As our large model firm is profitable, the impact of both alternatives is the same (-0.50%).

INSERT TABLE 4

We carry out the same simulations for a SME, taking into account the reduced corporate tax rates and the higher notional interest percentage. The results of these simulations are presented in Table 5. Comparing these results with those of a large company, the decrease is again mainly driven by the NID. However, despite the higher notional interest percentage for SMEs (+0.5%), the caused decline in tax burden is smaller compared with large companies (-10.72% instead of -12.07%). As Appendix 1B shows, this result is due to the fact that the average SME model disposes of a lower equity ratio (29.46%) than the average large company (34.34%), which implies that the NID can be less exploited. Therefore, it could be suggested that SMEs may claim a higher notional interest to obtain decreases in tax burden that are similar to large companies. The results further indicate that the patent deduction for SMEs decreases the tax burden by 0.38% instead of 0.50% for large companies. This can be explained by the lower investment activities of the SME model. Moreover, we can remark that when SMEs choose for the tax credit this turns out to be more favourable (-0.39%) than choosing for investment deduction (-0.38%). This is caused by the fact that in case of an investment deduction, the reduced tax rates are applied whereas in case of a tax credit, the higher standard tax rate is used.

INSERT TABLE 5

2.5.2 Common Corporate Tax Base

The changes of the effective tax burden induced by the adoption of the proposed CCTB regulations are displayed in Table 6 and Table 7, for a large company and SME respectively. It is assumed that the rules described in section 2.4 are implemented simultaneously. Since there is no intention to extend harmonization to corporate income tax rates, CCTB applies the Belgian tax rates.

INSERT TABLE 6

The results in Table 6 reveal an increased tax burden when CCTB would be valid. Particularly, CCTB increases the Belgian tax burden by 15.70%. This difference can be explained by the fact that under

CCTB specific national tax incentives (deductions or tax credits) are not allowed. However, when we start from the base case, leaving the Belgian incentives out of consideration, CCTB would only increase the tax burden to a small extent (1.15%). When looking at the isolated effects, the results indicate that the increase is mainly caused by the differences in depreciation rules. With respect to buildings, the Belgian as well as the CCTB system apply the straight line method. CCTB sets the useful life for buildings to 40 years, regardless of the type of building. Contrary, Belgium prescribes a useful life for office buildings of 33 years and allows a shorter depreciation period of 20 years for industrial buildings. Thus, the adoption of the common depreciation rules for buildings, which are more restrictive, causes an increase in the effective tax burden of 0.14%. Concerning machinery and equipment, the double declining method is used for Belgium. The results indicate that this leads to a smaller tax burden than the one reflected by the standard depreciation rate of 25% for asset pools under the proposed CCTB (0.38% for machinery and 0.37% for equipment). The last row of Table 6 shows the impact of the valuation of inventory. For CCTB the weighted-average-cost (WAC) method is chosen as an option, while for Belgium the LIFO method is applied. Assuming rising prices, the LIFO method leads to higher expenditures and results in a lower tax burden compared with the WAC method (0.25%). Table 7 presents the tax burden for a SME under both the Belgian and CCTB system. Comparing these results with those of a large company, CCTB increases the Belgian tax burden to a comparable, but somewhat lesser degree (14.18%).

INSERT TABLE 7

2.5.3 Sensitivity analysis: economic model assumptions

As a robustness check, we determine how changes in economic model assumptions influence the effect of a simultaneous introduction of all CCTB options.[30] More specific, the effects of the changes in the firm's capital intensity, profitability and capital structure are simulated and reported in Table 8.

INSERT TABLE 8

To measure the impact of the model firm's capital intensity on the tax burden in case of a CCTB, the share of tangible assets to total assets is raised (or lowered) by 5%, 10% and 15% with respect to the benchmark case. In return, long term receivables are reduced (or increased) accordingly to leave the sum of all assets unchanged. In general, the results show that the tax burden under both systems

[30] As benchmark case we consider the tax burden under the Belgian tax system taking into account the NID. We do not take into consideration the investment deduction or tax credit for patents as their impact is small.

decreases as the capital intensity becomes higher, i.e. more depreciation costs are deducted from the tax base. Comparing CCTB with the Belgian tax system, the tax burden according to the Belgian tax rules decreases faster due to its more favourable depreciation methods.

Apart from capital intensity, profitability is another factor that influences the tax burden. To measure this impact, the return on sales ratio is modified by changing sales revenues and keeping expenses stable. Increases and decreases of 10%, 20% and 30% are considered. The results in Table 8 show that the tax burden under both systems increases as sales revenues rise. As expenses like the NID are kept fixed, the tax burden under the Belgian tax system increases faster as this measure becomes less influential with growing profit.

The final analysis deals with the capital structure, i.e. the equity/debt ratio. This ratio is lowered or increased by 10%, 20% and 30%. When the equity ratio is higher than the benchmark case, the tax burden increases under both systems as less interests are deductible. In front of that, an equity ratio that is lower than the base case should decrease the tax burden as more interests accrue. The results, however, show that from a certain amount of debt, the tax burden increases under both systems. This can be explained by the working of the thin capitalization rule that restricts the deduction of interest to a debt/equity ratio of 1:1. For the Belgian system, lowering the equity ratio even causes a bigger increase because of a twofold effect: on the one hand, the thin cap rule applies, on the other hand, the benefit of the NID becomes smaller.

2.6 Conclusions and discussion

As the published proposal for a CCCTB lacks clarity about the technical details of consolidation and apportionment, a CCTB would be the most achievable option in the short term. In a recent study, Spengel et al. (2012) use the ETA to simulate the impact of a CCTB on the effective tax burden of companies in the 27 EU member states. However, given the large scale of their study, it is unfeasible to address all national tax regulations in great detail. To fill this gap in the literature, we focus on the impact of CCTB on the effective tax burden for Belgian companies in particular.

The results show that the introduction of CCTB would broaden the Belgian tax base and lead to an increase of the tax burden by 15.70%. This increase can be mainly explained by the fact that under CCTB specific national tax incentives like the NID are not allowed. Furthermore, CCTB applies less favourable depreciation and inventory valuation methods. As a robustness check, we look how changes in economic model assumptions influence the tax burden. Under both tax systems, increasing profitability and equity leads to a higher tax burden, whereas an increasing capital intensity leads to a lower tax burden. When comparing the CCTB with the Belgian tax system, the biggest differences in increase or decrease occur when the company is characterized by low profitability, high capital intensity and high equity.

If CCTB would be introduced as an optional tax system, Belgian companies will only choose for the new tax system if, at least, it does not increase their current tax burden in the short-term. In this respect, we could make some policy recommendations. First, Belgian policymakers could introduce two statutory corporate tax rates. Assuming an unchanged level of corporate tax income, the broader tax base under CCTB would give the opportunity to apply a reduced corporate tax rate compared with the current Belgian tax system. As the statutory tax rate is an important determinant of location decisions (Devereux et al., 2002), this could increase the attractiveness of Belgium for multinational investors. Another option Belgian policymakers could consider, is to convince Europe to extend Article 102 and 103 of the proposal so that national tax deductions or credits should be allowed under CCTB. Concerning the NID, this seems a feasible option, given the fact that other EU countries like Italy and Latvia already have experiences with a form of ACE (Parillo, 2012). For example, Italy allows domestic companies and Italian braches of foreign companies to apply a tax deduction computed as 3% of the equity formed after 2010 (Klemm, 2007; Panteghini et al., 2012).

Notwithstanding our contribution to the current literature, we have to deal with some shortcomings of our study. While our analysis focuses on the effective tax burden effects of a CCTB, our simulations do not capture all possible elements determining the desirability of such harmonization. Our analysis, for example, ignores the possible savings of compliance and administrative costs for multinationals. As studies in this field are scarce, this would be an interesting topic for future research. Further, as the ETA allows for a detailed calculation of the corporate tax base, an interesting avenue for future research would be to refine the ETA for other countries as regards SME rules or special tax incentives.

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Table 1: National GAAP, accelerated depreciation

	pre-tax			post-tax	
Period	0	1	2	1	2
Capital expenditure	-x				
Receipts		y	z	y	z
Interest receipts		0	yi	0	yi - yit +xit
Depreciation		x	0	x	0
Tax base		y - x	z+yi	y - x	z + yi - yit +xit
Tax payment		0	0	(y - x)t	$zt + yit - yit^2 + xit^2$
Cash flow available		y	z+yi	y(1-t)+xt	$z + yi - yit + xit - zt - yit + yit^2 - xit^2$
Future Value		y	**z+y(1+i)**	y(1-t)+xt	**[z + y(1+i)] - [y - x + z + 2yi - xi - yit + xit]t**

Table 2: CCTB, straight-line depreciation

	pre-tax			post-tax	
Period	0	1	2	1	2
Capital expenditure	-x				
Receipts		y	z	y	z
Interest receipts		0	yi	0	yi - yit +(x/2)it
Depreciation		x/2	x/2	x/2	x/2
Tax base		y - x/2	z+yi - x/2	y - x/2	z + yi - yit +(x/2)it -x/2
Tax payment		0	0	(y - x/2)t	$zt + yit - yit^2 + (x/2)it^2 - (x/2)t$
Cash flow available		y	z+yi	y(1-t)+(x/2)t	$z + yi - yit + (x/2)it - zt - yit + yit^2 - (x/2)it^2 + (x/2)t$
Future Value		y	**z+y(1+i)**	y(1-t)+(x/2)t	**[z + y(1+i)] - [y - x + z + 2yi - (x/2)i - yit + (x/2)it]t**

Table 3: Tax rules as implemented in ETA (fiscal year 2011)

	Belgian tax system	CCTB
Depreciation rules		
Land	Not depreciable	Not depreciable
Office building/Trade building	Straight line, 33 years	Individual straight line, 40 years
Factory building	Straight line, 20 years	Individual straight line, 40 years
Machinery	Double declining balance	Pooled, 25% of depreciation base
Factory/Office equipment	Double declining balance	Pooled, 25% of depreciation base
Patent and Licence	Straight line, 5 years	Individual straight line, 15 years
Production costs		
Direct costs	Included in depreciation base	Included in depreciation base
Indirect costs	Directly expensed	Directly expensed
R&D costs	Directly expensed	Directly expensed
Valuation of inventories	LIFO	WAC
Corporate income taxation		
Interest expenses	Deductible	Deductible
Business interest income	Taxable (tax credit for WT)	Taxable (tax credit for WT)
Dividend income (foreign and domestic)	95% exemption	95% exemption
Thin capitalization rules	1:1 debt/equity ratio	1:1 debt equity ratio
Loss treatment	Unlimited loss-carry forward	Unlimited loss-carry forward
Tax deductions		
Notional interest deduction	Linked to economic conditions, increased with 0.5% for SME	Not provided for
Investment deduction (excluding tax credit)	Single deduction of 13.5% (patents)	Not provided for
Tax credit (excluding investment deduction)	33.99% of the amount of the investment deduction (patents)	Not provided for

Table 4: Effective tax burden and impact of particular tax categories Belgian tax system, large company (fiscal year 2011)

		Tax burden	Impact
Base case Belgian Tax System		35,152,405	
Belgian Tax System: all options		30,732,669	-12.57%
Impact Option	Notional Interest Deduction	30,909,699	-12.07%
	Investment Deduction Patent	34,975,375	-0.50%
	Tax Credit Patent	34,975,376	-0.50%

Table 5: Effective tax burden and impact of particular tax categories Belgian tax system, SME (fiscal year 2011)

		Tax burden	Impact
Base case Belgian Tax System		1,230,717	
Belgian Tax System: all options		1,094,071	-11.10%
Impact Option	Notional Interest Deduction	1,098,811	-10.72%
	Investment Deduction Patent	1,226,081	-0.38%
	Tax Credit Patent	1,225,977	-0.39%

Table 6: Changes in effective tax burden by adoption of CCTB and isolated impact of specific regulations, large company (fiscal year 2011)

		Tax burden	Impact
Belgian Tax System: all options		30,732,669	
CCTB: all options		35,556,551	15.70%
Base case Belgian Tax System		35,152,405	
CCTB: all options		35,556,551	1.15%
Impact CCTB Option	Depreciation	35,476,081	0.92%
	Buildings	*35,202,137*	*0.14%*
	Machinery	*35,285,196*	*0.38%*
	Equipment	*35,283,964*	*0.37%*
	Valuation inventory	35,241,597	0.25%

Table 7: Changes in effective tax burden by adoption of CCTB and isolated impact of specific regulations, SME (fiscal year 2011)

		Tax burden	Impact
Belgian Tax System: all options		1,094,071	
CCTB: all options		1,249,231	14.18%
Base case Belgian Tax System		1,230,717	
CCTB: all options		1,249,231	1.50%
Impact CCTB Option	Depreciation	1,244,601	1.13%
	Valuation inventory	1,235,177	0.36%

Table 8: Effective tax burden when changing characteristics of model firm, large company (fiscal year 2011)

	Capital Intensity						
	-15%	-10%	-5%	Benchmark case	5%	10%	15%
Belgian Tax System	34,009,116	32,947,597	32,612,674	30,909,699	29,970,586	28,913,012	28,030,890
CCTB	39,010,911	37,828,028	37,461,782	35,556,551	34,508,443	33,333,856	32,339,274
Deviation	14.71%	14.81%	14.87%	15.03%	15.14%	15.29%	15.37%
	Profitability						
	-30%	-20%	-10%	Benchmark case	10%	20%	30%
Belgian Tax System	25,287,634	27,155,300	29,053,042	30,909,699	32,922,738	34,859,999	36,910,924
CCTB	29,264,699	31,364,725	33,477,738	35,556,551	37,796,842	39,952,284	42,234,999
Deviation	15.73%	15.50%	15.23%	15.03%	14.80%	14.61%	14.42%
	Capital Structure						
	-30%	-20%	-10%	Benchmark case	10%	20%	30%
Belgian Tax System	34,030,956	32,430,014	31,080,480	30,909,699	30,986,624	31,136,452	31,288,270
CCTB	35,976,805	35,164,658	35,069,480	35,556,551	36,309,807	37,138,489	37,978,212
Deviation	5.72%	8.43%	12.83%	15.03%	17.18%	19.28%	21.38%

Appendix 1A: Other economic assumptions

Expected economic lifetime for assets	
Production buildings	50 years
Office buildings	50 years
Patents	5 years
Plant	4 years
Machinery (five assets)	5 to 10 years
Office furniture and fixtures	9 years
Financial assets	zero
Stocks	zero
Rates of price increase	
Consumer price index	2.20%
Price index basic materials	4.80%
Price index wages	0.80%
Price index investment goods	2.30%
Interest rates for creditors and debtors	
Short term credit	3.00%
Long term credit	3.90%
Short term debt	5.90%
Long term debt	5.10%

Source: Spengel and Oestreicher, 2012, p15-16

Appendix 1B: Balance sheets and financial ratios of the large company and SME at the end of year 6

Assets	**SME**	**Large**	**Liabilities**	**SME**	**Large**
Fixed assets	*1,273,098*	*49,641,583*	*Shareholder funds*	*1,254,419*	*43,415,131*
Intangible fixed assets	74,800	2,875,872	Capital	420,924	18,207,742
Tangible fixed assets	1,085,961	37,793,443	Other shareholder funds	833,495	25,207,389
Other fixed assets	112,337	8,972,268			
			Non-current liabilities	*747,802*	*27,433,693*
Current assets	*2,985,322*	*76,792,466*	Long-term debt	*469,217*	*21,248,099*
Stocks	877,820	22,936,037	Other non-current liabilities	278,585	6,185,594
Debtors	1,433,559	15,945,781			
Other current assets	673,943	37,910,648	*Current liabilities*	*2,256,199*	*55,585,225*
			Loans	469,217	21,248,099
			Creditors	935,447	10,070,619
			Other current liabilities	851,535	24,266,507
Total	4,258,420	126,434,049	Total	4,258,420	126,434,049
Financial Ratios	**SME**	**Large**	**Financial Ratios**	**SME**	**Large**
Profit/loss for period (€)	194,624	4,124,827	Return on equity (%)	15.52	9.50
Sales (€)	7,167,799	159,457,817	Equity ratio (%)	29.46	34.34
Share of tangible fixed assets (%)	25.50	29.89	Cost for personnel to turnover (%)	18.20	20.97
Return on sales (%)	2.72	2.59	Inventories to capital (%)	20.61	18.14
Return on assets (%)	6.87	6.11			

Source: Spengel and Oestreicher, 2012, p15-16

CHAPTER 3:

AN EMPIRICAL INVESTIGATION INTO THE DESIGN OF AN EU APPORTIONMENT FORMULA RELATED TO PROFIT GENERATING FACTORS[31]

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Abstract

The European Commission (EC) has the intention to establish a Common Consolidated Corporate Tax Base (CCCTB), which requires an allocation formula to fairly distribute the consolidated tax base among all group entities. A fair distribution would mean that the allocation is closely related to the profit generating factors of the underlying entities. The EC supposes that fixed tangible assets, sales and labour are the dominant factors in the generation of profit. This paper shows that these proposed factors explain only 28% of the variation in profit. Moreover, we analyse the profit generating capacity of the alternative factor intangible assets. The results indicate that recognized intangibles do not increase the R^2 significantly. For R&D intensive companies, adding the market less book value to proxy for unrecognized intangibles, increases the explanatory power of the proposed model with an absolute value of 30%. This suggests that for these companies unrecognized intangibles could be important in generating profit.

3.1 Introduction

Europe is faced with several tax obstacles[34] which harm the international competitiveness of its multinationals (EC, 2001a). The European Commission (EC) believes that a Common Consolidated Corporate Tax Base (CCCTB) is the only comprehensive solution to remove the underlying causes of these obstacles (EC, 2001b). This new tax system determines the tax liability of a company belonging to a CCCTB group by applying four distinct steps. Firstly, each group member calculates its taxable profit according to the same set of rules. Secondly, the individual tax bases are summed up to the consolidated tax base. Thirdly, the consolidated tax base is allocated to the different group members

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[34] For example, increased compliance costs and double taxation. For more details on the main tax obstacles, see EC (2001b).

by means of an apportionment formula. Finally, each member state has the right to apply its own tax rate to the specific share of the overall tax base. (EC, 2001b; Schön et al., 2008)

Some of the main benefits[35] of a CCCTB arise from the consolidation aspect. However, an unavoidable consequence of consolidation is the need to apportion the consolidated tax base among the different group members. According to the Commission, the consolidated tax base should be distributed in an equitable and efficient manner (EC, 2006). Both in the European and the American literature, there is a consensus that 'equity' and 'efficiency' are two generally accepted tax principles. (Agundez-Garcia, 2006; Freedman and Macdonald, 2008; Fuest, 2008; Hellerstein, 2005; Schmidt, 1986; Spengel and Wendt, 2007)

In the context of an apportionment system, the *equity* principle asks for a fair distribution of the common tax base among the different group members. The literature mentions different types of fairness for apportionment purposes (Agundez-Garcia, 2006; Fuest, 2008; Spengel and Wendt, 2007). An obvious way is to distribute the common tax base according to the 'true' geographical source of income. However, in a multinational environment it seems impossible to determine the 'true' source of income (Hellerstein, 2005). As an alternative, Agundez-Garcia (2006) mentions the 'equal capacity to earn income' approach in order to reach a fair apportionment system. A fair distribution would mean that the allocation of the consolidated tax base is closely related to the profit generating factors of the underlying entities (Agundez-Garcia, 2006; Hellerstein, 2005). This approach is reflected in the Commission's conviction that "an apportionment formula (AF) should be based on factors that reflect the source of income generation as closely as possible" (EC, 2006, p. 5).

In order to achieve an *efficient* apportionment system, different goals should be attained. First of all, the tax system should be neutral, which means that it should not influence economic agents' behaviour. The apportionment formula, for example, should not introduce incentives to shift factors. Moreover, the formula should be simple and cost efficient in order to reach the European objective to reduce compliance costs. Finally, the new formula should be enforceable and tax evasion should be avoided (Agundez-Garcia, 2006; Spengel and Wendt, 2007). However, it is not that obvious to fulfil the equity and the efficiency principle simultaneously. A formula including two factors, for example, could be cost-efficient and reasonably fair but could, nevertheless, leave room for tax planning opportunities. In this paper, we focus on the equity principle and leave the efficiency principle out of consideration.

With respect to the allocation of the consolidated tax base, the CCCTB proposal includes an equally weighted three factor formula containing fixed tangible assets, sales and labour (EC, 2011). The Commission supposes that these factors are the dominant factors in the generation of profit and therefore believes that these factors are potentially fair factors to be included into the EU

[35] For example, the elimination of intra-group transactions and the offset of losses within the group.

apportionment formula. In spite of this intention, the choice of the allocation factors remains an important subject of discussion (EP, 2011). Another pertinent question is how these factors should be weighted (EC, 2007a; Hellerstein and McLure, 2004).

Previous literature already focused on the fairness of an apportionment mechanism to share the consolidated tax base (Henszey and Koot, 1983; Hreha and Silhan, 1986; Schmidt, 1986; Sheffrin and Fulcher, 1984). In a more recent study, Hines (2010) shows that the proposed formula does a poor job in allocating the consolidated tax base in a fair way. To our knowledge, the current literature mainly focuses on the allocation factors of large companies without taking SMEs into consideration. However, CCCTB will be available for all sizes of companies. The system would especially benefit SMEs as they would incur less compliance costs when they decide to expand their activities across the EU (EC, 2011). Also, the current literature does not contain any empirical research on the potential role of alternative factors in the allocation of the common tax base.

We contribute to the literature by filling these gaps. Using European firm level data, we first investigate to what extent the European proposed allocation factors represent profit generating activities when taking into account all sizes of companies. Second, we examine if the allocation factors should be equally weighted. Finally, we analyse and discuss the profit generating capacity of the alternative factor intangible assets, which can be seen as the success factors of the modern company.

Our main results show that the European proposed allocation factors fixed tangible assets, labour and sales explain only 28% of the variation in profit. Constraining the apportionment factors to be equally weighted, hardly changes this result. Further, the results indicate that recognized intangible assets, as extracted from the balance sheets, play a rather minor role in the generation of profit. However, the market less book value as a proxy for unrecognized intangibles tends to be important in explaining profit.

The paper is organized as follows. Section 3.2 gives a brief history about the development of the apportionment formula in the US, Canada and Europe. The theoretical framework and research questions are presented in section 3.3. The data are given in section 3.4. Section 3.5 presents the methodology and results. Section 3.6 concludes.

3.2 Brief history of the apportionment formula

The system of apportionment formula is well-known in the American states, the Canadian provinces and Swiss cantons,[36] which have many years of experience with this system. In the next paragraphs,

[36] The description of the Swiss system is beyond the scope of this paper. Swiss cantons are free to choose their own apportionment factors. For further details see Daly and Weiner (2003).

we give a brief overview of the development of formula apportionment in the US and Canada. We also sketch the progress Europe has made in its development of a possible future sharing mechanism.

3.2.1 United States

At the start of the 20th century most states gradually began to impose corporate income taxes[37]. Initially, corporate income taxes were determined on the basis of separate financial reports. However, business groups viewed separate accounting as unsuitable[38] for their purposes, since more and more corporations conducted their business in several states. This forced most states to adopt an apportionment formula by the end of the 1930s. In the early years of apportionment, the states used formulas that captured a wide range of income generating factors. In 1929, the formulas included items like property values, inventory, manufacturing costs, payroll, accounts receivable, (net cost of) sales and purchases. To bring order to this chaotic situation and to stimulate uniformity, the National Tax Association (NTA) recommended in 1933 the use of the "Massachusetts formula". This formula includes property, payroll and sales and gives equal weights to these factors. The Massachusetts formula was widely applied among the states by the 1950s, especially with the introduction of the Uniform Division of Income for Tax Purposes Act (UDITPA) of 1957 and the Multistate Tax Compact (MTC) of 1967. UDITPA not only defined the Massachusetts formula, but also provided uniform definitions of the allocation factors. According to the UDITPA definitions, property equals the average value of the taxpayer's owned or rented tangible property used in the taxing state. The property definition does not include intangibles, although some states include certain intangible property, such as computer software. Payroll equals the total amounts (wages, salaries, commissions, etc.) paid as a compensation of employees, whereas the sales by destination factor includes all gross receipts (sales of goods and services, rentals and royalties) net of returns, allowances and discounts. The aim of the MTC, which incorporates the UDITPA definitions, was to "promote uniformity and compatibility in significant components of tax systems" (Hey, 2008, p.27). However, the application of UDITPA and MTC does not limit states to deviate from the recommended rules. States may alter the rules for their own purposes. Since the early 1980s, there has been a tendency to place a greater weight on the sales factor while decreasing the weight on property and payroll. Nowadays, the double-weighted sales formula is the most common state formula. This is seen as the states' efforts to use the apportionment formula to promote economic development because the establishment of new branches within the state is encouraged by the more tax attractive production factors capital and labour. Moreover, most in-state headquartered companies sell most of their product out of state and these sales are by consequence taxed abroad. Finally, industry-specific formulas have been introduced that

[37] Before the corporate income tax was introduced at the federal level, most states adopted taxes on capital stock (franchise taxes) and not on net profits (Hey, 2008).

[38] For example, business groups had difficulties with applying the right arm's length price (Weiner, 1999).

deal with special characteristics of certain industries such as construction, transportation, financial institutions, broadcasting, etc. For example, income from the transportation industry is apportioned by the number of miles, number of passengers carried or tons of freight. (Hellerstein and McLure, 2004; Hey, 2008; Indiana Fiscal Policy Institute, 1989; Weiner, 2005; Weiner, 1999)

3.2.2 Canada

By the end of the 1930s, the federal government and all Canadian provinces levied corporate income taxes[39]. During World War II the provinces nevertheless had to cede the right to tax corporate income to the federal government to finance the war. After the war, a model provincial corporation income tax act was created and from then on, the provinces regained control over their corporate income tax. This act recommended a single-factor apportionment formula including destination based gross receipts, which was incorporated in the first Tax Rental Agreement (TRA). Seven provinces joined the first TRA, only Ontario and Quebec used a different apportionment formula. In 1946, a second TRA added a payroll factor to the formula, with gross receipts and payroll weighted by one-half each. The intention of the tax authorities was to balance the interests of the marketing and manufacturing provinces. At the start of the 1960s, Ontario and Quebec joined the second TRA and adopted the federal allocation rules. Although provinces could depart from the two-factor formula, their policies were harmonized. This harmonization was facilitated by the federal government, which incurred all the provincial administration and collection costs in exchange for using the federal allocation formula. The uniformity continues to exist even though Ontario, Alberta and Quebec no longer participate in the corporate tax collection agreements. Notwithstanding this fact, the three provinces define their tax base and apportionment formula in close accordance with the federal agreements. In brief, for the past half century the Canadian provinces have generally used an equally weighted payroll and gross receipts formula. For industries with particular characteristics, the Canadian provinces apply specific formulas. Income from airlines, for example, is apportioned on the basis of fixed assets and revenue plane miles. (Daly and Weiner, 2003; Mintz, 1999; Weiner, 2005; Weiner, 1999; Wildasin, 2000)

3.2.3 Europe

In March 2011, the European Commission launched a proposal for a Council directive on a Common Consolidated Corporate Tax Base (EC, 2011). In line with the priorities set in Europe 2020 [40], CCCTB has the intention to remove the underlying causes of tax obstacles and stimulate cross border economic

[39] Some provinces taxed corporate income before the federal government adopted corporate income tax at the start of the 20th century. Until the first World War, there was no coordination between the provinces and federal government (Weiner, 2005).

[40] Communication from the Commission, 'Europe 2020: A strategy for smart, sustainable and inclusive growth', (EC, 2010).

activities. There is a considerable interest in Europe to allocate the consolidated tax base using a sharing mechanism which is similar to the American Massachusetts formula. Namely, the Commission prefers an equally weighted three factor formula including sales, labour and capital. Labour and capital would represent the supply side on the generation of companies' income and sales would represent the demand side[41]. As opposed to the Massachusetts formula, the Commission suggests a labour factor that consists of *two* equally weighted elements, namely payroll and number of employees. As regards assets, it is suggested that for practical problems with respect to valuation and mobility only fixed tangible assets should be taken into account. To compensate for the lack of intangibles, the EC proposes that "in the five years that follow a taxpayer's entry into an existing or new group, its asset factor shall also include the total amount of costs incurred for research, development, marketing and advertising by the taxpayer over the six years that preceded its entry into the group" (EC, 2011, p.51). With respect to sales, only proceeds of goods and services should be covered (EC, 2007b; EC, 2004; EC, 2001b).

3.3 Theoretical framework and research questions

It is widely recognized that taxable profits should be shared among the various group entities in a fair way. Under the current system of 'separate accounting' profits are divided between the different group entities in accordance with the arm's length principle, i.e. intercompany transactions should be priced as they would have been obtained between independent companies. In an international context, income may be taxed according to the residence based principle (e.g. royalties) or the source based principle (e.g. income of a permanent establishment) (Hellerstein, 2005). Due to this coexistence, situations of double taxation occur. Another problem of separate accounting is the abuse of transfer pricing to shift profits from high to low tax countries. So, there is a risk that the reported income under separate accounting does not reflect economic activity. (Agundez-Garcia, 2006; Hellerstein, 2005)

Under CCCTB, the consolidated tax base is divided between the group members according to an apportionment formula. A fair formula implies that the factors used in the apportionment formula should reflect how income is actually generated (Musgrave, 1984). So, CCCTB is aligned to the 'source principle' as the source country has the right to tax these profits. Musgrave (1984) mentions two ways to look at the generation of profits.

Firstly, according to the *supply-based view*, "the factor inputs should be measured in a way that reflects their inclusion in the production function" (Musgrave, 1984, p. 241). Following this definition, production inputs like capital and labour seem to be natural candidates to be taken into account.

[41] The sales factor was the most controversial issue in the apportionment formula. Some experts are proponents of "sales by origin", others of "sales by destination". For more details on the proposed apportionment factors see EC (2007b).

However, several authors defend the idea that only capital would be appropriate to share the consolidated tax base. Sorensen (2004) and Mintz (1999) argue that the corporation tax is intended as a tax on the return to capital and not as a tax to other factors. Moreover, Hellerstein and McLure (2004) believe that there is little theoretical foundation for basing apportionment on labour costs because labour costs can differ significantly between taxing jurisdictions. Including labour would harm the implicit assumption of using optimal allocation factors, i.e. relative prices of production factors should not differ across jurisdictions.

Secondly, according to the *supply/demand-based view*, Musgrave (1984) argues that a sales factor could be added to the origin based production factors. Such a formula would recognize the contribution of marketing jurisdictions (i.e. the jurisdictions where sales take place) to profits. However, some authors doubt whether 'demand' is an income generating factor as demand is nowadays not used as a criterion for assigning taxing rights between jurisdictions. Although most economists would favour an origin or supply-based view to distribute income, there is no real scientific way to choose between the two views (EC, 2007a; Mintz, 1999).

Some studies verified the fairness of certain apportionment formulas. Using actual state tax returns, Henszey and Koot (1983) investigate the Pennsylvanian equally-weighted three factor formula and conclude that the formula actually reflects how business income of multinational groups is generated. Another study was carried out by Sheffrin and Fulcher (1984) who show that formula factor modifications in the US lead to disparate effects at the industry level. Also Hreha and Silhan (1986) address the issue of apportionment formula fairness in the US, taking into account the factors sales, property and payroll. Their results show that the factor payroll distorts the allocation of income and that a property and sales formula should be preferred. The research of Schmidt (1986) extends the work of Hreha and Silhan (1986) by also studying the industry effects. The results show that property, payroll and sales significantly reflect income and that these factors are stable over time but not across industries. Moreover, Schmidt indicates that two or three factor formulas perform as well as the standard three factor apportionment formula. A more recent study by Hines (2010) shows that the apportionment factors sales, property and labour (payroll and number of employees) do a very poor job in explaining variation in income between firms. Also, Hines suggests that labour should play no role in allocation formulas.

The current literature focuses on the profit generating capacity of the factors sales, tangible assets and labour. Intangible assets are left out of consideration. However, studies show that intangible assets represent an important and growing component of the total capital stock and can be considered as the 'crown jewels' of the modern company (Corrado et al., 2009; Hellerstein, 2005; Hulten and Hao, 2008). Moreover, intangibles enhance firms' competitive advantage and performance (Gattai and Molteni, 2007; Marrocu et al., 2012). Given this evolution, another stream of research has developed a *knowledge-capital* model where firms' intangible assets should be included as an input factor in the

production function in addition to physical assets and labour (Jaafar, 2010; Marrocu et al., 2012; O'Mahony and Vecchi, 2009). From the point of view of fairness, jurisdictions where intangible assets are present, have a strong claim to profits that are associated with those assets and therefore intangible assets should be included into the apportionment formula. Ignoring intangible assets would allocate a low share of the consolidated tax base to corporations where these assets such as patents and software are often developed (Sorensen, 2004; Li, 2002).

In this paper, we first examine to what extent the proposed allocation factors tangible assets, labour and sales represent profit generating activities. Based on the economic theories explained before, we expect all factors to have a positive and significant contribution to the generation of profit. Second, we consider the alternative of including intangible assets. In line with the knowledge-capital theory, we expect intangibles to have a positive and significant contribution as well.

3.4 Data

We use firm-level data from the Amadeus database for the European manufacturing and service sectors in the year 2008[42]. We consider the unconsolidated statements of non-listed companies registered in one of the 27 EU member states.[43] Based on the economic theories in section 3.3, we do not expect that profit generating factors would differ according to company size. So, to increase the reliability of our findings, we select a sample of all corporations that are defined as an SME or large company[44]. In particular, we select companies with a minimum number of ten employees and with a minimum total turnover or minimum total assets of two million euros.

For this sample we collect the following data: tangible fixed assets (fta), intangible fixed assets (ifa), sales (sal), number of employees (emp), labour compensation (cos) and profit/loss before taxation (pl)[45]. Companies with missing values are excluded from the sample. Also, extreme values below the 1st percentile and above the 99th percentile are dropped[46]. A final sample of 12,027 companies is retained, containing complete information on the dependent and independent variables.

Table 1 presents descriptive statistics for all variables in the year 2008. The average profit before taxation is € 867,000. Further, the sample has an average sale of € 21,685,000, average tangible and

[42] Manufacturing: NACE codes 15-36 and service: NACE codes 50-74 and 92.1-2

[43] We do not use the consolidated statements because these statements do not link the profit of an entity with its allocation factors. Unconsolidated statements of companies belonging to a consolidated group, could be distorted by profit shifting. As a robustness check we isolate and analyze the unconsolidated statements of independent companies and find similar results.

[44] According to the definitions of the European Commission (EC, 2007c).

[45] Tax data are confidential and unavailable, therefore we use financial data as a proxy

[46] As a robustness check, we also drop extreme values below the 5th and above the 95th percentile and find similar results.

intangible assets of € 3,465,000 and € 375,000 respectively, average labour compensation of € 3,066,000 and an average of 79 employees. The correlation matrix is reported in Appendix 1. All variables are correlated in a positive and significant way.

INSERT TABLE 1

3.5 Methodology and results

3.5.1 Evaluation of the proposed apportionment factors

In this first part of section 3.5, we analyse to what extent the allocation factors as proposed by the EC represent profit generating activities. In particular, we use regression techniques to analyse the relationship between profit and the allocation factors sales, assets, cost of employees and number of employees. Therefore, we compose 11 regressions including one, two or three factors[47]. Firstly, the parameters of the regressions are determined by the data using ordinary least squares (unrestricted regressions). Secondly, the parameters of the regressions are restricted to be equal (restricted regressions). Table 2 reports the coefficients of determination, R^2, which represent the percentage of the variance in profit explained by the variables in the regression[48]. All R^2 are significant at the 1% level. Based on the R^2, the table also provides a ranking of the formulas with the first one being the most accurate. Further, Table 2 shows that the restricted formulas perform less than the unrestricted. However, constraining the formulas hardly influences the ranking order of the different formulas. It is remarkable that all formulas including sales perform highly, irrespective of the number of factors included. The best performing formula is the unrestricted three factor formula including cost of employees as labour factor (11).

INSERT TABLE 2

A more in-depth study of the proposed three factor formula can be obtained by investigating the incremental R^2. This is the increase in R^2 when adding a new independent variable to a regression already containing previously entered variables. If the incremental R^2 is significant, the newly added

[47] To avoid multicollinearity and double weighting of the labour factor, cost of employees and number of employees are not simultaneously entered into an equation.

[48] A property of R^2 is that it is a non-decreasing function of the number of explanatory variables present in the model (Gujarati, 2009, p.201). In this paper we are especially interested in the size of the R^2 increase when adding (a) new variable(s).

variable is deemed important in the regression equation. To determine the causal priority of the variables, we start from the production function theory. This economic theory believes capital and labour to be the main variables explaining income (Musgrave, 1984). The inclusion of the sales factor as a reflection of the demand side of creating income is under discussion (see section 3.3). According to these findings, the sales factor is the last variable to be included into the regression equations. However, we could not find a logical reasoning for ordering the factors assets and labour. Therefore, we start with the labour factor in a first model and with the assets factor in a second model. These two models are formed twice, once with cost of employees (A and B) and once with number of employees (C and D) as their labour factor. Results of the incremental regression analysis are presented in Table 3. All incremental R^2 are significant at the 1% level, which means that all added variables are deemed important in the regressions. In what follows, the results in Table 3 are analysed in more detail.

First including cost of employees into the equation (1A) gives a significant R^2 of 0.1981. This indicates that this factor explains a significant proportion of the variation in profit. Adding assets (2A) to this equation, results in a significant incremental R^2 of 0.0043. This means that the assets factor explains a significant proportion of the variance of profit above the variance already explained by the factor cost of employees. Similarly, the factor sales accounts for a significant proportion of the variation in profit above the variation already explained, namely 0.0744 (3A). First entering fixed tangible assets into the equation (1B) gives a significant incremental R^2 of 0.0507. Adding the cost of employees (2B) increases R^2 with 0.1517. Introducing the sales factor adds again 0.0744 to R^2 (3B). This last result indicates that also the demand factor sales is important in explaining profit. The models using number of employees as labour factor (C and D) can be analysed in the same way. Comparing step 1A with step 1C, cost of employees explains a bigger share of the variance in profit than number of employees. Moreover, comparing step 2B with step 2D we can remark that cost of employees adds 0.1517 to R^2, while number of employees only adds 0.0594. As a result, we could state that cost of employees is a more accurate labour factor compared with number of employees, which can also be concluded from the results in Table 2.

INSERT TABLE 3

The importance of the variables can also be determined by means of their standardized betas[49]. Table 4 reports the betas resulting from the three factor formula including number of employees (formula 10) and cost of employees (formula 11) as labour factor, which can be formally written as:

[49] The standardized beta coefficients can be interpreted as if the regressor increases by one standard deviation, on average, the regressand increases by β*standard deviation units (Gujarati, 2009, p. 158).

$$pl_i = \alpha + \beta_1 sal_i + \beta_2 fta_i + \beta_3 emp_i + \varepsilon_i \quad (1)$$

$$pl_i = \alpha + \beta_1 sal_i + \beta_2 fta_i + \beta_3 cos_i + \varepsilon_i \quad (2)$$

As expected, all betas are positive and significant[50]. Table 4 also shows that sales does a relative important job in explaining profit. Cost of employees explains the variance in profit more than the number of employees, which is consistent with prior findings. Looking at the assets factor, this factor is significant but rather small.

INSERT TABLE 4

3.5.2 Evaluation of the apportionment factor intangible assets

Recognized intangible assets

In this second part of section 3.5, we analyse to what extent the alternative factor intangible assets represents profit generating activities. We simply use the item intangible fixed assets (ifa), extracted from the balance sheets, as the proxy variable for intangibles. This variable could, for example, include R&D, concessions, patents, but also goodwill. However, in Amadeus no details are available about the amount of goodwill and other categories of intangible assets. To analyse intangible assets, we evaluate 12 regressions composed of one, two, three or four factors. We form unrestricted and restricted regressions as explained under 3.5.1. Table 5 reports the R^2 of all regressions and provides a ranking of the formulas with 1 being the most accurate. Comparing the R^2 of the unrestricted with those of the restricted regressions, we remark that the unrestricted formulas perform better than the restricted formulas and that the ranking order of both sets strongly resembles. The best performing formula is the unrestricted four factor formula including cost of employees as labour factor. Further, the regressions including intangible assets have very similar R^2 compared with the regressions excluding intangible assets (see Table 2).

INSERT TABLE 5

A more in-depth study of the profit generating capacity of the alternative factor intangible assets can be obtained by investigating the incremental R^2. The results of this analysis are presented in Table 6. Two different models are used, one with cost of employees and one with number of employees as a

[50] Also, the beta coefficients of all other formulas are positive and significant and can be distributed upon request.

labour factor (E and F). For both models, adding the factor intangible assets does not increase R^2 in a significant way. This surprising result means that recognized intangibles are not important in explaining the variation in profit above the variation already explained by the proposed three factors. In particular, the proposed formula including cost of employees (1E) significantly explains the variation in profit for 27.68%. Adding recognized intangibles to this equation results in an incremental R^2 of 0.0002 which is not significant. The model including number of employees (F) leads to similar results.

INSERT TABLE 6

Table 7 reports the standardized beta coefficients of the formulas (22) and (23), including the three factors proposed by the Commission and the factor recognized intangible fixed assets:

$$pl_i = \alpha + \beta_1 sal_i + \beta_2 fta_i + \beta_3 ifa_i + \beta_4 emp_i + \varepsilon_i \quad (3)$$

$$pl_i = \alpha + \beta_1 sal_i + \beta_2 fta_i + \beta_3 ifa_i + \beta_4 cos_i + \varepsilon_i \quad (4)$$

The coefficients of the factor intangibles are small and not significant. Again, this indicates that intangibles, as extracted from the balance sheets, do a poor job in explaining the variation in profit.

INSERT TABLE 7

Unrecognized intangible assets

A possible explanation for this unexpected result could be that current accounting methods require most intangibles to be expensed. As a consequence, capitalized intangibles do not reflect many firms' valuable intangible assets (Barth et al., 1999; Dedman et al., 2009; Penman, 2009). Therefore, we look elsewhere to capture firms' intangible assets. The stock market could act as an independent valuation source that provides more objective assessments of the value of firms' intangibles (Choi et al., 2000).

We form a second sample consisting of listed companies that otherwise meet the same criteria as explained under section 3.4. A final sample of 259 listed companies is retained, containing complete information on the dependent and independent variables. We use the market less book value of equity (mlb) to proxy for unrecognized intangible assets. The market value is calculated as the outstanding shares of the company multiplied by the market price at the end of year 2008. The book value equals the equity on the balance sheet. Notwithstanding that this proxy is a 'catch-all' category which could

contain the residual value of assets already recognized on the balance sheets, several studies suggest that the difference between a company's market value and its book value results would to a great extent be due to the intangible assets not reflected in the balance sheet (Lev, 2004; Whitwell et al., 2007). As unrecognized intangible assets tend to be large and important (Danthine and Jin, 2007; Dedman et al., 2009; Penman, 2009), we expect market less book to have a positive and significant contribution to the generation of profit.

For the year 2008, Appendix 1 presents descriptive statistics for all variables of the listed companies. The average profit before taxation is € 29,361,000. Further, the sample has an average sale of € 540,745,000 and average tangible and intangible assets of € 155,690,000 and € 13,149,000 respectively. The average labour compensation amounts € 79,610,000 and the average number of employees is 1,276. The average market less book value equals € 256,838,000. Appendix 1 presents the correlation matrix indicating that all variables are correlated in a positive and significant way.

For this sample of listed companies, we want to investigate to what extent recognized and unrecognized intangible fixed assets could explain the variance of profit above the variance already explained by the factors as proposed by the Commission. In order to do this, we investigate the incremental R^2 statistics which can be found in Table 8. We start with the best performing three factor formula including cost of employees as labour factor (1G). Adding the factor intangibles (2G) results in a small incremental R^2 of 0.0241 which is only significant at the 10% level. Introducing the factor market less book significantly increases the R^2 with 0.2450, which results in a total R^2 of 0.7320. Consistent with the expectations, this result indicates that the market less book value plays an important role in explaining the variation in profit.

INSERT TABLE 8

Based on the distribution of its forecast errors (y-hat(y)) relative to its forecasted profits (hat(y)), a Wilcoxon signed rank test is used to determine which formulas are significantly more accurate than the others. This Wilcoxon test is a nonparametric test which ranks paired differences between any two observations. The results of this test can be found in Table 9. The third column of this table computes the residual sum of squares for the proposed formula including the best performing labour factor cost of employees (11), the formula adding ifa (23) and the formula adding mlb (24). We can notice that the formula including mlb (24) exhibits the lowest degree of allocative error and the proposed formula (11) the highest. For an overview of the Z-statistics, we refer to Appendix 1. The fourth column of Table 9 summarizes the results of these comparisons and indicates that the formula including market less book (24) performs significantly better than the two other formulas. Moreover, the formula including ifa (23) does not perform significantly better than the formula without ifa (11).

INSERT TABLE 9

Based on the Industrial R&D Investment Scoreboard, we split up our sample into sectors[51] that can be characterized as high R&D intensive (R&D to sales ratio higher than 5%) or low R&D intensive (R&D to sales ratio lower than 1%). For example, chemicals can be considered as a high R&D intensive sector whereas the food sector is low R&D intensive (Castello et al, 2010; Uppenberg, 2011). For more details on this division we refer to Appendix 2. Empirical research has shown that stock markets consider R&D investments as a significant profit creating activity (Choi et al., 2000). So, for R&D intensive companies we expect market less book to have a more positive and significant contribution to profit than for non R&D intensive companies.

Table 10 shows the results of the incremental regressions for companies active in R&D intensive and non R&D intensive sectors. First, analysing the results of the R&D intensive companies, we remark that the model without mlb is not significant. This means that for these companies, the model including the proposed allocation factors, with or without ifa, does not explain the variance of profit in a significant way. Adding the factor mlb to the model results in a significant incremental R^2 of 0.2982. Second, investigating the results of the non R&D intensive companies, we notice that the model without mlb explains the variance of profit in a significant way. Particularly, the model including the proposed allocation factors has a significant explanatory power of 45.72%. Adding recognized intangibles does not significantly increase R^2, which is in line with previous results. Including mlb to the formula results in a small incremental R^2 that is significant at the 10% level. Consistent with the expectations, these results suggest that for the R&D intensive companies, unrecognized intangible assets could be important in explaining profit.

INSERT TABLE 10

In a the next analysis, we include a dummy variable for R&D intensive companies (D). The dummy equals 1 if the company is active in an R&D intensive sector, otherwise the dummy takes the value zero. We include the interaction variable dummy R&D intensive*mlb (D*mlb) which gives us the

[51] In Amadeus no details are available on R&D costs at the level of the company. So, as a proxy we have to rely on the R&D intensity of the industrial sectors in accordance with the NACE codes. Using these NACE codes could lead to biased results. In particular, it could be possible that some companies would be wrongly classified as R&D intensive. However, as our sample consists of listed companies, the probability of this mismatch is rather small.

opportunity to study the effect of mlb for R&D intensive companies. Table 11 presents the results of the following regression:

$$pl_i = \alpha + \beta_1 sal_i + \beta_2 fta_i + \beta_3 ifa_i + \beta_4 cos_i + \beta_5 mlb_i + \beta_6 D_i + \beta_7 (D_i * mlb_i) + \varepsilon_i \quad (5)$$

The effect of mlb on profit is positive and significant for both R&D intensive and non R&D intensive companies. However, for R&D intensive companies an increase of one standard deviation in mlb, on average, increases profit with 0.8103 standard deviation (0.2727+0.5376), which is higher than for non R&D intensive companies (0.2727). This suggests that for R&D intensive companies unrecognized intangible assets could be more important in generating profit than for non R&D intensive companies.

INSERT TABLE 11

As 2008 was a special year on the stock market, this could influence the results. As a robustness check, Appendix 3 repeats the analyses for the years 2006 and 2007. The results reveal that for both years the market premium (mlb) of high R&D intensive companies increases the R^2 to a greater extent compared with low R&D intensive companies. In particular, for R&D intensive companies mlb results in a significant incremental R^2 of 0.3850 in 2006, whereas for non R&D companies this increase is only 0.0312. In 2007, these incremental R^2 are 0.2879 and 0.0040 respectively. These findings confirm our previous results for the year 2008.

3.6 Conclusion

The European Commission is convinced that the consolidated tax base of multinational groups opting for CCCTB should be distributed in a fair way. A fair distribution would mean that the allocation of the consolidated tax base is closely related to the profit generating factors of the underlying entities. The Commission supposes that fixed tangible assets, sales and labour are the dominant factors in the generation of profit and therefore considers these factors as potentially fair factors to be included into the EU apportionment formula. Using European firm level data, we investigate to what extent the allocation factors as proposed by the EC represent profit generating activities taking into account all sizes of companies. Moreover, we examine if the allocation factors should be equally weighted. Finally, as intangibles represent an important and growing component of the total capital stock, we analyse the profit generating capacity of this alternative factor.

In order to answer these research questions, we first collect a sample of unlisted European companies for the manufacturing and service sectors. In order to evaluate the extent to which the apportionment factors explain the variation in profit, we analyse the standardized beta coefficients, the R^2 statistics and the predictions errors of the regressions. To study the effects of using equal weights, we form two

sets of formulas. The first set represents unrestricted regressions where the weights are determined by the data and not by prior choices. The second set contains restricted regressions applying equal weights to the different apportionment factors. In general, constraining the formulas has a negligible influence on the ranking order of the different formulas in terms of explanatory power. So, the EC's proposal to apply equal weights would be defensible. A more in-depth study of the proposed formulas reveals that the best performing formula is the three factor formula including sales, tangible assets and labour costs. These three factors significantly explain 28 % of the variation of profit between firms. Moreover, the results indicate that the demand factor sales is the dominant factor in explaining profit, which implies that reducing the weight on the sales factor would be a bad policy choice from a fairness point of view. The results also reveal that cost of employees is the most accurate labour factor. Further, it is shown that adding intangible assets, as extracted from the balance sheets, does not increase the R^2 statistics. This may suggest that recognized intangible assets play a rather minor role in the generation of profit. Second, we form a sample of listed companies for which we use the market less book value of equity to proxy for unrecognized intangible assets. We split up our sample into sectors that can be characterized as R&D intensive or non R&D intensive. For R&D intensive companies the proposed allocation factors do not explain the variation in profit in a significant way. However, adding the market less book value significantly increases the explanatory power of the model with an absolute value of 30 %. This suggests that for R&D intensive sectors unrecognized assets could be important in generating profit.

To our knowledge, this is the first empirical study looking at profit generating capacity of the apportionment factor intangible assets within a European context. It could be argued that for simplicity and efficiency reasons intangibles should be excluded from the asset factor. However, from a fairness point of view, omitting intangible assets is highly unsatisfactory since this would mean ignoring a significant portion of assets for many multinationals. Moreover, this would ignore one of the potentially most important profit generating factors. Countries where intangible assets are abundantly present, have a strong claim to profits associated with those assets. Therefore, leaving out intangibles from the apportionment formula should be compensated. The EC proposal to temporary include in the asset factor previously incurred costs for research, development, marketing and advertising could be a first, but less far-reaching step in the right direction. Nevertheless, future research should be directed towards practical solutions for valuing and locating intangible assets.

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Table 1 Descriptive statistics, all variables are in thousands except for number of employees, 2008 (unlisted companies)

	Unlisted companies			
No. of obs. = 12,027	Min.	Max.	Mean	Std.
Profit/loss before tax	-6,010	31,512	867	2,696
Sales	1,385	561,359	21,685	38,172
Tangible fixed assets	4	101,469	3,465	8,060
Intangible fixed assets	0	18,526	375	1,324
Number of employees	10	1,381	79	124
Cost of employees	215	57,763	3,066	5,010

Table 2 Profit prediction accuracy among proposed apportionment factors (unlisted companies)

	Unrestricted			Restricted (equally weighted)	
No. of obs. = 12,027	R^2	Rank all[a]	Rank 2 & 3	R^2	Rank[a]
One factor					
(1) sal	0.2413***	6			
(2) tfa	0.0507***	11			
(3) emp	0.0965***	10			
(4) cos	0.1981***	8			
Two factors					
(5) sal & tfa	0.2437***	5	5	0.2420***	4
(6) sal & emp	0.2475***	4	4	0.2415***	5
(7) sal & cos	0.2767***	2	2	0.2572***	1
(8) tfa & emp	0.1101***	9	7	0.0523***	7
(9) tfa & cos	0.2024***	7	6	0.1366***	6
Three factors					
(10) sal , tfa & emp	0.2484***	3	3	0.2422***	3
(11) sal, tfa & cos	0.2768***	1	1	0.2558***	2

[a] Each formula was given a rank, with 1 the most accurate

***, **, * indicate significance at the 1, 5 and 10% level respectively

Table 3 Incremental regression analysis proposed apportionment factors (unlisted companies)

No. of obs. = 12,027		R^2	Incremental R^2	P-value
With cost of employees as labour factor				
1A	cos	0.1981		0.0000
2A	cos + tfa	0.2024	0.0043	0.0005
3A	cos + tfa + sal	0.2768	0.0744	0.0000
1B	tfa	0.0507		0.0000
2B	tfa + cos	0.2024	0.1517	0.0000
3B	tfa + cos + sal	0.2768	0.0744	0.0000
With number of employees as labour factor				
1C	emp	0.0965		0.0000
2C	emp + tfa	0.1101	0.0136	0.0000
3C	emp + tfa + sal	0.2484	0.1383	0.0000
1D	tfa	0.0507		0.0000
2D	tfa + emp	0.1101	0.0594	0.0000
3D	tfa + emp + sal	0.2484	0.1383	0.0000

Table 4 Proposed apportionment factors as determinants of profit (unlisted companies). The table represents standardized beta coefficients and robust standard errors are presented between brackets.

	Profit/loss before tax	
No. of obs. = 12,027	(10)	(11)
Sales	0.4387***	0.3475***
	(0.0022)	(0.0022)
Tangible fixed assets	0.0336*	0.0122
	(0.0066)	(0.0066)
Number of employees	0.0816***	
	(0.4449)	
Cost of employees		0.2321***
		(0.0151)
R^2	0.2484***	0.2768***

***, **, * indicate significance at the 1, 5 and 10% level respectively

Table 5 Profit prediction accuracy among proposed apportionment factors and intangible assets (unlisted companies)

	Unrestricted		Restricted (equally weighted)	
No. of obs. = 12,027	R^2	Rank[a]	R^2	Rank[a]
One factor				
(12) ifa	0.0192***	12		
Two factors				
(13) ifa & sal	0.2419***	6	0.2418***	6
(14) ifa & fta	0.0609***	11	0.0567***	10
(15) ifa & emp	0.1007***	10	0.0266***	11
(16) ifa & cos	0.1981***	8	0.1890***	7
Three factors				
(17) sal, fta & ifa	0.2440***	5	0.2423***	4
(18) fta, ifa & emp	0.1131***	9	0.0582***	9
(19) fta, ifa & cos	0.2024***	7	0.1383***	8
(20) ifa, sal & emp	0.2476***	4	0.2420***	5
(21) ifa, sal & cos	0.2769***	2	0.2573***	1
Four factors				
(22) sal, fta, ifa & emp	0.2485***	3	0.2424***	3
(23) sal, fta, ifa & cos	0.2770***	1	0.2557***	2

[a] Each formula was given a rank, with 1 the most accurate

***, **, * indicate significance at the 1, 5 and 10% level respectively

Table 6 Incremental regression analysis intangible assets (unlisted companies)

No. of obs. = 12,027		R^2	Incremental R^2	P-value
With cost of employees as labour factor				
1E	(cos, tfa, sal)	0.2768		0.0000
2E	(cos, tfa, sal) + ifa	0.2770	0.0002	0.4021
With number of employees as labour factor				
1F	(emp, tfa, sal)	0.2484		0.0000
2F	(emp, tfa, sal) + ifa	0.2485	0.0001	0.5934

Table 7 Apportionment factors as determinants of profit (unlisted companies). The table represents standardized beta coefficients and robust standard errors are presented between brackets.

	Profit/loss before tax	
No. of obs. = 12,027	(22)	(23)
Sales	0.4373***	0.3488***
	(0.0022)	(0.0022)
Tangible fixed assets	0.0329*	0.0132
	(0.0067)	(0.0066)
Intangible fixed assets	0.0101	-0.0166
	(0,0386)	(0.0402)
Number of employees	0.0801***	
	(0.4495)	
Cost of employees		0.2360***
		(0.0154)
R^2	0.2485***	0.2770***

***, **, * indicate significance at the 1, 5 and 10% level respectively

Table 8 Incremental regression analysis intangible assets and market less book (listed companies)

No. of obs. = 259	Factors	R^2	Incremental R^2	p-value incremental	p-value total model
1G	(cos, tfa, sal)	0.4629			0.0000
2G	(cos, tfa, sal) + ifa	0.4870	0.0241*	0.0995	0.0001
3G	(cos, tfa, sal, ifa) +mlb	0.7320	0.2450***	0.0050	0.0000

***, **, * indicate significance at the 1, 5 and 10% level respectively

Table 9 Paired comparison of prediction errors (listed companies)

No. of obs. = 259	Formula	Residual Sum of Squares (RSS)	Significantly more accurate than[a]
(24)	cos, tfa, sal, ifa, mlb	1.47E+12	(23), (11)
(23)	cos, tfa, sal, ifa	2.82E+12	
(11)	cos, tfa, sal	2.95E+12	

[a] The Wilcoxon matched-pairs signed ranks test is used to identify which differences were significant among the formulas. Significance at the 1% level.

Table 10 Incremental regression analysis: R&D intensive and non R&D intensive companies (listed companies).

	Factors	R2	Incremental R2	p-value incremental	p-value total model
R&D intensive companies, No. of obs. = 118					
1H	(cos, tfa, sal)	0.4931			0.2631
2H	(cos, tfa, sal) + ifa	0.5516	0.0585	0.1469	0.3502
3H	(cos, tfa, sal, ifa) +mlb	0.8498	0.2982***	0.0050	0.0001
non R&D intensive companies No. of obs. = 141					
1I	(cos, tfa, sal)	0.4572			0.0000
2I	(cos, tfa, sal) + ifa	0.4937	0.0365	0.1298	0.0000
3I	(cos, tfa, sal, ifa) +mlb	0.5262	0.0325*	0.0967	0.0000

Table 11 Apportionment factors as determinants of profit (listed companies).
The table represents standardized beta coefficients and robust standard errors are presented between brackets

No. of obs. = 259	Profit/loss before tax
	(25)
sales	-0.5460
	(0.0216)
tangible fixed assets	0.2213***
	(0.0178)
intangible fixed assets	0.0618
	(0.1208)
cost of employees	0.4398
	(0.1331)
market less book value (mlb)	0.2727*
	(0.0169)
dummy r&d intensive	-0.0722***
	(6619.027)
mlb x dummy r&d intensive	0.5376*
	(0.0344)
R-squared	0.7669***

***, **, * indicate significance at the 1, 5 and 10% level respectively

Appendix 1

Correlation matrix (non listed companies)

No. of obs. = 12,027	Profit/loss before tax	Sales	Tangible fixed assets	Intangible fixed assets	Number of employees	Cost of employees
Profit/loss before tax	_	_	_	_	_	_
Sales	0,4175***	_	_	_	_	_
Tangible fixed assets	0,1490***	0,4456***	_	_	_	_
Intangible fixed assets	0,0385***	0,2647***	0,1953***	_	_	_
Number of employees	0,2499***	0,5855***	0,4841***	0,2592***	_	_
Cost of employees	0,3134***	0,6659***	0,4081***	0,3101***	0,8479***	_

***, **, * indicate significance at the 1, 5 and 10% level respectively.

Descriptive statistics, all variables are in thousands except for number of employees, 2008 (listed companies)

	Listed companies			
No. of obs. = 259	Min.	Max.	Mean	Std
Profit/loss before tax	-142,000	2,031,000	29,361	145,921
Sales	772	44,300,000	540,745	3,393,686
Tangible fixed assets	18	5,622,658	155,690	675,535
Intangible fixed assets	0	651,300	13,149	54,866
Number of employees	15	69,954	1,276	5,820
Cost of employees	786	5,125,000	79,610	425,626
Market less book	-552,291	16,900,000	256,838	1,379,845

Correlation matrix (listed companies)

No. of obs. = 259	Profit/loss before tax	Sales	Tangible fixed assets	Intangible fixed assets	Cost of employees	Market less book
Profit/loss before tax	_	_	_	_	_	_
Sales	0.4596***	_	_	_	_	_
Tangible fixed assets	0.3608***	0.7178***	_	_	_	_
Intangible fixed assets	0.2477***	0.4414***	0.3067***	_	_	_
Cost of employees	0.4106***	0.8247***	0.6671***	0.5582***		_
Market less book	0.3813***	0.1778***	0.1098*	0.1790***	0.2083***	_

***, **, * indicate significance at the 1, 5 and 10% level respectively.

Wilcoxon Z-statistics

No. of obs. 259	Wilcoxon Z-statistics[a]	
Formula	(21)	(24)
(11)	0.169	3.741
(21)	_	3.178
(24)		_

[a] The Wilcoxon Matched-Pairs Signed Ranks test is used to identify which differences of (|y-hat(y)|/|hat(y)) are significant among the formulas. If the Wilcoxon Z-statistic is greater than 2.58, the difference in the ranks between the two formulas was deemed to be significant at the 1% level.

Appendix 2
Sample description industries

Two-Digit NACE	Industry Description	Number of Observations
R&D intensive sectors (118)		
24	Manufacture of chemicals and chemical products	20
30	Manufacture of office machinery and computers	4
31	Manufacture of electrical machinery and apparatus n.e.c.	10
32	Manufacture of radio, television and communication equipment and apparatus	12
33	Manufacture of medical, precision and optical instruments, watches and clocks	15
34	Manufacture of motor vehicles, trailers and semi-trailers	4
353	Manufacture of other transport equipment	1
72	Computer and related activities	52
R&D non intensive sectors (141)		
15	Manufacture of food products, beverages	27
16	Manufacture of tobacco products	1
17	Manufacture of textiles	4
18	Manufacture of wearing apparel; dressing and dyeing of fur	5
20	Manufacture of wood and wood products	5
21	Manufacture of pulp, paper and paper products	3
22	Publishing, printing and reproduction of recorded media	17
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail	4
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	37
52	Retail trade, except of motor vehicles and motorcycles: repair of personal and household goods	9
60	Land transport; transport	4
61	Water transport	5
62	Air transport	1
63	Supporting And auxiliary transport activities; activities of travel agencies	10
64	Post and telecommunications	9

Appendix 3

Incremental regression listed companies: R&D intensive and non R&D intensive companies for year 2006

Year 2006 (No. 267)	Factors	R2	Incremental R2	p-value incremental
R&D intensive companies (No. 120)				
1	(cos, tfa, sal)	0.4615		
2	(cos, tfa, sal) + ifa	0.5321	0.0706**	0.0315
3	(cos, tfa, sal, ifa) +mlb	0.9171	0.3850***	0,0000
non R&D intensive companies (No.147)				
1	(cos, tfa, sal)	0.7183		
2	(cos, tfa, sal) + ifa	0.8088	0.0904***	0.0051
3	(cos, tfa, sal, ifa) +mlb	0.8400	0.0312*	0.0790

***, significance at the 1% level. **, significance at 5% level. *, significance at the 10% level.

Incremental regression listed companies: R&D intensive and non R&D intensive companies for year 2007

Year 2007 (No. 280)	Factors	R2	Incremental R2	p-value incremental
R&D intensive companies (No. 127)				
1	(cos, tfa, sal)	0.6676		
2	(cos, tfa, sal) + ifa	0.6781	0.0104	0.3245
3	(cos, tfa, sal, ifa) +mlb	0.9660	0.2879***	0,0000
non R&D intensive companies (No.153)				
1	(cos, tfa, sal)	0.8647		
2	(cos, tfa, sal) + ifa	0.8767	0.0120*	0.0844
3	(cos, tfa, sal, ifa) +mlb	0.8807	0.0040	0.2551

***, significance at the 1% level. **, significance at 5% level. *, significance at the 10% level.

CHAPTER 4:

WHAT DO POLITICIANS THINK OF THE COMMON CONSOLIDATED CORPORATE TAX BASE? A BELGIAN CASE STUDY

Annelies Roggeman[52] and Philippe Van Cauwenberge[53]

Abstract

Since the launch of the EC's proposal on CCCTB in 2011, some remarkable developments took place at the political level. However, in-depth studies examining these political developments in one country are lacking. Applying case study methodology, this paper contributes to this emerging area of research by describing and discussing the views of Belgian politicians on CCCTB in the Belgian Parliament, the European Parliament and the Council. Moreover, it is investigated to what extent and how Belgian politicians used macro-economic, legal or ideological arguments to found their opinion. In general, the findings show that a big majority of the Belgian politicians were proponents of CCCTB. During the discussions in each of the political institutions, the politicians referred to the macro-economic impact of CCCTB, the legal certainty of CCCTB as well as the party's view to underpin their opinion. Besides several similarities, the implications of harmonization and the optionality of CCCTB involved clear differences in view between left and right parties. As Belgium is a likely candidate for introducing CCCTB, the findings of this research are valuable to other EU-countries.

4.1 Introduction

On 16 March 2011, the European Commission (EC) launched a proposal for a Council Directive on a Common Consolidated Corporate Tax Base (CCCTB). According to this proposal, the implementation of CCCTB would be optional. Each company of a group opting for CCCTB would use a common set of rules to calculate its individual taxable profit. These individual tax bases would then be summed up to the consolidated tax base. This consolidation of tax bases would result in the elimination of intra-group transactions and off-set of losses. Thereafter, the consolidated tax base would be allocated among the individual companies according to their proportions in the group's total of labour, sales, and tangible assets, i.e. the apportionment formula. Finally, as the Commission does not have the

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intention to introduce a harmonised corporate tax rate, each member state would preserve the right to apply its own tax rate to the obtained share of the overall tax base (EC, 2011).

Since the launch of the CCCTB proposal in 2011, further developments took place at the political level. Within eight weeks from the publication of the CCCTB proposal, all national parliaments had the right to assess whether the CCCTB proposal complied with the general principles of subsidiarity and proportionality (EU, 2012). About one year later, on 19 April 2012, the Members of the European Parliament (MEPs) casted their votes on the EC's proposal for a CCCTB (EP, 2012a). At present, the EC proposal is negotiated in the Council which has final decision power on the adoption of a CCCTB (Council of the EU, 2013a).

Using documentation and archival records, this paper describes and discusses the views of Belgian politicians on CCCTB in the Belgian Parliament, the European Parliament as well as the Council of the European Union. Elaborating on the development of CCCTB from a Belgian point of view, this paper contributes to the literature in three ways. First, although exceptional in the CCCTB literature, the case study methodology was chosen for this purpose. As CCCTB implies a complex political process of negotiations at several levels, the use of case study methodology was considered as more opportune in terms of gaining insights compared to other methodologies (Yin, 2003). Second, to the best of our knowledge, studies examining the political views on CCCTB in one particular country are lacking. We decide to study the case of Belgium as this is a representative case for open and small economies within the EU (Abraham, 1995). In addition, Belgium is a likely candidate for the procedure of 'enhanced cooperation' where a minimum number of nine member states would introduce CCCTB (Belgian Chamber of Representatives, 2011b). As unanimity is required in the Council to adopt CCCTB by the Union as a whole, enhanced cooperation seems to be a more feasible option. (Bettendorf et al., 2010). So, studying the Belgian point of view is interesting as this view will be relevant in further developments of CCCTB. Third, we contribute to the literature by examining which factors could influence the politicians' views about CCCTB. In order to do this, we combine literature from the fields of economics, tax law and political science.

A number of theoretical (e.g. Runkel and Schjelderup, 2011) and empirical studies (e.g. Oestreicher and Koch, 2011) looked at the macro-economic impact of CCCTB, mainly measured in terms of corporate tax revenues. However, these studies reported mixed results as the results were dependent on the assumptions underlying the simulations. Approaching CCCTB from a macro-economic perspective, this case study describes to what extent and how Belgian politicians used macro-economic impacts of CCCTB as an argument to support or refuse this new tax system. In particular, we examine to what extent the arguments were vague or detailed and pay attention to the role of existing impact studies.

In the political science literature, Hix (2002) showed that politicians are exposed to party discipline, meaning that politicians would be punished if they disobey the party ideology. Typically, left and centrist parties would be more supportive of European integration and strict government regulation compared to right parties (e.g. Aspinwall, 2002). In this case study, we discuss the arguments of each party in favour or against CCCTB and look for striking similarities or differences. Moreover, as CCCTB is a move towards more European integration and a stricter government regulation, this study looks for any evidence that left and centrist parties would be more supportive of CCCTB.

Further, the legal certainty[54] of CCCTB was assessed in several tax law studies. For example, Lang et al. (2013) showed that problems of interpretation occur with the defined concepts in the CCCTB proposal. Moreover, conflicts exist between the CCCTB rules and the Double Tax Conventions. Approaching CCCTB from a legal perspective, this case study describes to what extent and how Belgian politicians attached importance to legal certainty when expressing their views about CCCTB. In particular, we study which aspects of legal certainty occurred and look how the Belgian results interact with the results of existing studies evaluating the legal certainty of CCCTB from a general point of view.

In general, the findings show that a big majority of Belgian politicians were proponents of CCCTB. During the discussions in each of the political institutions, the politicians referred to the macro-economic impact of CCCTB, the legal certainty of CCCTB and the party's view to underpin their opinion about CCCTB. Several discussions items like the optionality of CCCTB reappeared and only slightly differed in form and content.

The paper is organized as follows. Section 4.2 theoretically describes which factors could play a role in the politicians' opinion about CCCTB. Section 4.3 explains the methodology used in this paper. Section 4.4 discusses the findings and section 4.5 concludes.

4.2 Theoretical background

4.2.1 Macro-economic effects

The economic principle of 'efficiency' is widely recognized for evaluating the desirability of tax systems (Desai and Hines, 2003). An efficient tax system implies that taxes should not influence the taxpayer's economic decisions. However, if taxation at the micro-level is not efficient, this would also lead to inefficiencies and welfare losses at the macro-level. In other words, an inefficient tax system would lead to an allocation which is not Pareto-optimal[55] (Musgrave and Musgrave, 1989; Schäfer, 2006). In the context of the introduction of a CCCTB, only a limited numbers of studies investigated if

[54] Legal certainty means that laws should be clear, stable and enforceable (Fuller, 1969).

[55] A Pareto-optimum means that it is not possible to enhance the welfare of an economic agent without lowering the welfare of another economic agent (Musgrave, 1989).

this new corporate tax system would be more efficient or Pareto improving compared to the current twenty-eight national corporate tax systems[56] (e.g. Runkel and Schjelderup, 2011). Otherwise said, these studies investigated if CCCTB would make member states better off without making other member states worse off. In the literature, however, no consensus is reached on how such a Pareto improvement should be measured (Avi-Yonah and Clausing, 2008). Most studies only considered the corporate tax revenues of member states, while other studies also took into account other criteria like welfare, GDP, investments and employment.

Using a theoretical model, Runkel and Schjelderup (2011) showed that replacing the current system of separate accounting by formula apportionment, as described in the CCCTB proposal, would increase tax revenues and welfare for each country. At the EU level, welfare would increase by 1.1 billion euro under CCCTB. Also developing a theoretical model, Nielsen et al. (2010) investigated how changes in effective tax rates would affect capital formation, input choice, transfer pricing as well as spillovers on tax revenues and welfare in other countries. The analysis showed that a move from separate accounting to CCCTB would not eliminate such spillovers and in some cases (e.g. under transfer pricing costs of intermediate level) even aggravate them.

In addition to these theoretical studies, also empirical studies looked at the economic impact of CCCTB[57]. Table 1 summarizes the results of three empirical studies for the EU as a whole. At the country level, we only report the results for Belgium as this is the focus of our paper. The study of Oestreicher and Koch (2011) assessed the revenue consequences of introducing an optional and compulsory CCCTB. The analysis took into account an EU-wide loss offset, formula apportionment, the full exemption of intragroup dividends and was based on a comparative-static simulation using company micro data from the Amadeus database. In the EC impact assessment, the study of Bettendorf et al. (2011) measured the economic impact of CCCTB not only in terms of revenue, but also in terms of welfare, employment, GDP and investments. To quantify the economic implications micro data on European countries from the Orbis database were combined with a computable general equilibrium model, the CORTAX model. As the CORTAX model took into account behavioural responses, the outcomes of the study should be interpreted as the comprehensive effects of the CCCTB. The Ernst & Young study by Cline et al. (2011) used a tax model based on company level

[56] A stream of literature focuses on issues of tax rate competition versus tax rate harmonization in Europe. As CCCTB implies harmonization of the national corporate tax bases, we leave this literature out of consideration. For a literature review of tax rate competition versus harmonization we refer to Zodrow (2003).

[57] We only discuss theoretical and empirical studies which appeared after the publication of the proposal for a CCCTB Council Directive (EC, 2011). For example, despite the merits of the empirical studies of Fuest et al. (2007) and Devereux and Loretz (2008), these older studies substantially deviate from the proposal. Fuest et al. (2007), for example, only take into account German outbound multinationals and therefore ignore that CCCTB would be applied by multinational companies located in all member states.

data from the Amadeus database and aggregate statistical information to estimate changes in the allocation of revenues among the member states, i.e. the 'static' impact of CCCTB. In addition, taking into account a change of relative corporate tax rates on new investments, the study also assessed the 'dynamic' economic impact as measured by GDP, employment and investments (Cline et al., 2011).

INSERT TABLE 1

Table 1 shows that in 70% of all outcomes the EU would lose from introducing CCCTB, which suggests that it would be rather unlikely that a move towards CCCTB would be Pareto-improving. All three studies agree that the EU would not be better off in terms of employment, GDP and investments. However, the studies disagree with respect to the change in corporate tax revenues. For example, in case of a compulsory CCCTB Bettendorf et al. (2011) and Cline et al. (2011) expect an increase in tax revenue of 0.06% and 0.20% respectively, while Oestreicher and Koch (2011) estimate a decrease of 4.56%. Belgium would lose in 45% of all reported outcomes in Table 1. Looking at the different economic impact measures, significant differences can be observed between the three studies, so that we cannot draw general conclusions. Although it is not the purpose of this paper to explain these differences between the three impact studies, differences could be attributed to divergent databases, different parameters underlying the simulations, various approaches to proxy for taxable income, deviations in the applied apportionment formula or the choice of a static versus a behavioural approach.

4.2.2 Party ideology

Studies of Bowler and Farrell (1995) and Corbett et al. (2011) have shown that politicians with functions like chair, vice-chair, rapporteur, expert or party group coordinator play a key role in the opinion formation of legislative procedures. However , these initiators are subject to 'party discipline'. Party discipline implies that party leaders are able to impose sanctions on politicians who deviate from the party position. Strong party leaders could enforce this discipline by controlling the (re)election prospects and future leadership positions of politicians (Faas, 2003; Hix et al. 2005).

With respect to voting behaviour in the EP, Hix (2002) found that MEPs were exposed to national party discipline as well as European party discipline. In particular, MEPs had to follow the instructions of the principal who controlled their EP election, i.e. the national party, and the instructions of the principal who controlled their influence in the EP, i.e. the EP party. Long term studies in the EP revealed that the cohesion[58] within parties has become stronger over time, both at the national and

[58] To proxy for party discipline, Hix et al. (2005) apply a party cohesion or agreement index, i.e. an index measuring the extent to which party members vote in the same way.

European party level. Further, these studies showed that national cohesion was higher for Euro-sceptical parties and topics of great national importance (Faas, 2003; Hix et al. 2005).

In the literature, two ideological dimensions can be distinguished with respect to the position of the party. First, the pro/anti Europe dimension deals with the party's attitude towards European integration. In particular, this dimension concerns the question how fast and far-reaching European integration should proceed. Centrist parties like the socialist, liberals and conservatives are typically the ardent supporters of integration while more left and right oriented parties in Europe are more hesitant to give up national autonomy (Aspinwall, 2002; Hix et al. 2007; Hix and Noury, 2009). Second, a traditional left-right dimension can be distinguished among parties. In general, left parties favour more strict government regulation whereas right parties prefer a more liberal 'laissez faire' economic policy (Osterloh and Debus, 2012; Aspinwall, 2002; Hix et al. 2007; Hix and Noury, 2009).

4.2.3 Legal certainty

Legal certainty is one of the most fundamental legal values wich also applies to taxation. (Fuller, 1969) According to the legal philosopher Fuller (1969), laws should be clear, stable and enforceable in order to achieve legal certainty. Clear and transparent rules would ensure that laws would have an accurate meaning and that they would be unambiguous by those who are subject to it. The requirement of stability would imply that laws should not be changed too frequently as this would make it hard for citizens to behave in accordance with these laws. Finally, the enforcement of laws would deal with the use of public agents to detect and sanction violators of legal rules and this should occur in a cost-effective way (Fuller, 1969; Raitio, 2003).

In the context of the CCCTB proposal, the legal certainty of the proposed rules was assessed in several tax law studies. Freedman and McDonald (2008) evaluated the preliminary documents of CCCTB with respect to the common tax base. They argued that CCCTB should explicitly refer to IFRS and combine this reference point with an autonomous set of tax principles. The study of de La Feria and Dorado (2008) assessed the introduction of a thin capitalization rule[59] in the context of a CCCTB. According to the authors, the introduction of a specific instead of a general anti-abuse rule would increase the legal certainty of thin capitalization. In addition, the rule should be compatible with EC law and the EC provisions on the fundamental freedoms like the free movement of capital. The recent studies of Lang (2012) and Lang et al. (2013) evaluated the legal impact of CCCTB in relationship to third countries. In particular, the authors discussed the articles of the proposal with respect to intrest deductibility, transfer of assets, transparent entities, withholding taxation, double taxation conventions, etc… In general[60], it was concluded that the CCCTB proposal represented an impressive legal

[59] Thin capitalization rules limit a firm's debt-to-equity ratio to control highly leveraged financing structures.

[60] A detailed discussion of all considered articles is beyond the scope of this paper. For more details we refer to Lang (2012) and Lang et al. (2013).

achievement. However, the legal certainty was problematic in several aspects. First, difficulties with interpretation appeared as the definition of dividends, for example, was not aligned with other international tax law. In order to increase clarity, the authors suggested that CCCTB would follow the wording of provisions of an already existing Directive, for example the parent-subsidiary Directive. Second, conflicts existed between the rules of CCCTB and Double Tax Conventions (DTCs). For example, a DTC could avoid double taxation of dividends by the credit method whereas CCCTB would apply the exemption method[61]. In this respect, Lang et al. (2013) are advocates of a European Union-wide DTC. Such an EU DTC would harmonize all existing bilateral tax treaties and would be a promising way to apply CCCTB in a correct way. The study of Panayi (2013) stressed that it would be very likely that the enforcement of CCCTB would entail high administrative costs for tax authorities. In particular, tax authorities would be faced with two distinct tax systems, namely CCCTB and the applicable national corporate tax system. Also, the cross border nature of tax audits and the frequent interactions with other tax authorities would result in additional costs.

4.2.4 Research questions

Referring to the findings and expectations of the literature with respect to the macro-economic impact, party ideology and legal certainty of CCCTB, we examine the following research questions:

Question 1: To what extent and how did Belgian politicians use macro-economic impacts of CCCTB as an argument to support or refuse CCCTB? In particular, to what extent were their arguments vague or detailed and what is the role of existing impact studies?

Question 2: To what extent and how were Belgian politicians influenced by party ideology? Moreover, can we find any evidence that members of right parties would be less supportive of CCCTB as CCCTB is a move towards more European integration?

Question 3: To what extent and how did Belgian politicians attach importance to legal certainty when expressing their views about CCCTB? In particular, which aspects of legal certainty occurred and how did the Belgian results interact with the results of existing studies evaluating the legal certainty of CCCTB from a more general point of view?

4.3 Methodology

As in-depth studies concerning the political view about CCCTB are lacking, a case study approach was chosen to produce more detailed information on this topic. Moreover, to describe the political view in relation to the macro-economic, ideological and legal perspectives, the use of a case study

[61] Under the exemption method the country of residence exempts the received income of the source country. Under the credit method both countries tax the income, but the country of residence grants a credit for the tax paid in the source country.

would be more opportune in terms of gaining insights into this relationship. Or as Yin (2003) generally declares: "case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context" (Yin, 2003).

To investigate the political view about CCCTB, we decided to shed light on the case of Belgium. Belgium was chosen as it is a representative case for open and small economies within the EU (Abraham, 1995). Additionally, Belgium is a plausible candidate for the procedure of 'enhanced cooperation' where a minimum of nine member states would introduce CCCTB (Belgian Chamber of Representatives, 2011b). In the literature, enhanced cooperation is considered as a more realistic option as unanimity is required in the Council to adopt CCCTB by the Union as a whole (see e.g. Bettendorf et al., 2010). So, discussing the Belgian point of view is useful as this view will problably be relevant in the further negotiations on CCCTB.

Our case study employs an embedded design (Eisenhardt, 1989) as three levels of analysis are involved in the case. In particular, we discuss the Belgian position at the level of the politician, the party level and at the country level. However, as our research questions are defined at the individual level, the politician is considered as our primary unit of analysis (Yin, 2003). In the context of CCCTB, an embedded design is preferred above a holistic design as CCCTB implies a complex political process of negotiations at several levels. For that reason our case study not only focuses on the primary unit of analysis, but also considers the larger units of analysis.

In order to enhance the reliability of the findings, multiple sources of data[62] were obtained and analyzed (Patton, 2002; Silverman, 2005). First, documentation - like letters, minutes of meetings, written reports, articles – were collected and put into a database. Second, archival records were collected and these records contained vote outcomes, party names, personal names and other personal data like gender and age. Further, the theoretical framework was replicated as the Belgian politicians' views were analyzed at three different development stages of CCCTB, namely the developments in the Belgian Parliament, the European Parliament and the Council. Finally, to enhance the validity of our study, a key informant reviewed the accuracy of the actual facts presented in the case report. Also, this review was useful as new materials and alternative interpretations of the findings could be added.

4.4 Findings case study

4.4.1 Belgian Parliament

According to Protocol nr. 2 of the Lisbon Treaty, member states have the right to assess whether legislative proposals by the European Commission comply with the general principles of 'subsidiarity' and 'proportionality'. The subsidiarity principle means that in areas of shared competence, as is the

[62] The collection of information from multiple sources is called 'data triangulation' (Patton, 2002).

case with CCCTB, the EU can only act insofar the objectives of the proposed action cannot be sufficiently achieved by the member states themselves. Proportionality entails that the least onerous measure should be chosen and that the disadvantages may not be disproportionate to the aims pursued (EU, 2012, Art 5,§3 and §4). Within eight weeks from the publication of the CCCTB proposal, all national parliaments could send their reasoned opinions to the Commission. Each unicameral national Parliament disposed of two votes and if a bicameral system applied[63], each chamber had one vote. If the number of reasoned opinions represented at least one-third of the total votes, the so-called 'yellow card procedure' had to be applied. In that case the Commission should re-consider the proposal and decide whether to maintain, amend or withdraw it (EU, 2012). However, the CCCTB proposal could escape this yellow card procedure. The minimum number of yellow cards, notably 18 votes (i.e. one third of 54 votes) was not reached. In total, 13 negative votes were counted coming from Bulgaria, Malta, the Netherlands, Poland, Romania, Slovakia, Ireland, the United Kingdom and Sweden (Belgian Chamber of Representatives, 2011a).

In the light of the yellow card procedure, the Commission of Finance and Budget of the Belgian Parliament (CFB) examined the subsidiarity and proportionality principle of the CCCTB proposal on the 11th and 17th of May, 2011. Table 2 gives an overview of the arguments used by the members of the CFB. Each party[64] disposed of a fixed number of members in the CFB who put forward their opinion. For practical reasons, we only mention the names of the political parties in the text. The personal names of the CFB members are reported in Appendix 2. As the CFB members examined if CCCTB complied with the principles of subsidiarity and proportionality, this opinion does not include a comprehensive judgment about CCCTB. However, the items in Table 2 show that CCCTB was broadly discussed and not limited to these principles.

In general, most members were positive about the CCCTB proposal and found that the principles of subsidiarity and proportionality were not violated. However, the first column of Table 2 shows that the members of the Walloon liberal party (MR) and Walloon christian-democratic party (cdH) did not agree with this position. According to them, more information was needed to take this decision. When analyzing the discussions of the members into more detail, we could distinguish five subjects of discussion: (i) macro-economic effects, (ii) corporate tax rate, (iii) optionality, (iv) characteristics country and (v) other issues (Belgian Chamber of Representatives, 2011a).

INSERT TABLE 2

[63] For example, the Belgian Federal Parliament is a bicameral parliament. It consists of the Chamber of Representatives and the Senate.

[64] In the federal parliament of Belgium most political families consist of a Flemish and Walloon party. For example, the liberal family is respresented by the Flemish 'Open VLD' and the Walloon'MR'.

A striking finding is that all members mentioned the macro-economic impact of CCCTB (see column (i)). Some members spoke in general terms of increased efficiency (e.g. PS and VB), whereas other members were more specific and referred to existing impact studies. For example, the representative of the socialist party sp.a referred to the E&Y study by Cline et al. (2011) and informed that under a compulsory CCCTB tax revenues and employment would increase for Belgium. A member of the conservative party N-VA mentioned the EC study by Bettendorf et al. (2011) and quoted the impact for Belgium in terms of welfare (+1.21%), employment (-0.16%), investments (-2.89%) and GDP (+2.10%) (Belgian Chamber of Representatives, 2011a). From the literature review under section 4.2.1, significant differences could be observed between the existing impact studies, so that we could not draw general conclusions for Belgium. However, the members of the CFB did not sketch the full picture of the Belgian impact as they limited themselves, for example, to a selection of results of one specific study. In some respect, the findings suggest that the CFB members were cherry picking to defend their interests.

Related to the macro-economic impact, was the discussion about the harmonization of the national corporate tax rates (see column (ii)). According to the CCCTB proposal, each member state would apply its own national tax rate to the received part of the consolidated tax base. So, the EC would not introduce a harmonized tax rate (EC, 2011). During the discussions in the CFB, a clear difference in view appeared between members of the left and right parties. Members of left parties preferred to apply a harmonized tax rate, a minimum tax rate or range of tax rates to tackle the harmful effects of tax competition. By contrast, members of right parties argued that tax rate competition would improve the competitiveness of the EU and therefore the determination of the corporate tax rate should stay under the sovereignty of the individual countries (Belgian Chamber of Representatives, 2011a).

Column (iii) of Table 2 shows that all CFB members agreed that the legal enforcement of an optional CCCTB would imply high compliance costs for tax administrations. Therefore, a mandatory CCCTB should be introduced. However, a socialist member would provide for a transition period, whereas a liberal member would only impose a mandatory CCCTB for big companies. Further, members from centrist parties stressed that under an optional system, not only tax administrations but also companies, would suffer from high compliance costs. In particular, in order to make their choice companies should call in professional advice. Related to legal certainty, green and socialist members feared that the cooperation between the different tax administrations would be problematic (see column (v)). However, an efficient collection and control of the different corporate income taxes would be essential to achieve legal certainty. By contrast, a member of VB argued that CCCTB would give the opportunity to achieve administrative simplification (Belgian Chamber of Representatives, 2011a).

An element which we did not anticipate in the theoretical section, is that all members evaluated CCCTB not only in terms of efficiency, but also in terms of equity. In an international context, equity means that the source country has the right to tax the profits which are generated within its jurisdiction

(Musgrave, 2000). According to the EC, the factors tangible assets, labour and sales are the dominant factors in the generation of profit and considered as fair factors to include in the apportionment formula (EC, 2011). However, during the discussions in the CFB all members agreed that the apportionment formula would not be fair as it would favour old industrial economies at the expense of knowledge and service based open economies (see column (iv)). Some politicians proposed to include intangible assets and financial assets in the formula (Belgian Chamber of Representatives, 2011a).

Referring to party ideology as explained under section 4.2.2, we could expect that the left and centrist parties would be more supportive of CCCTB. In general, we could not find evidence for this expectation in the CFB. As already mentioned, CCCTB did not comply with the principles of subsidiarity and proportionality according to the centrist parties MR and cdH. However, for some specific discussion items left and center parties were more supportive compared to right parties. First, the EU should only harmonize the national corporate tax bases as is the case under the CCCTB for right parties, whereas the other parties would extend harmonization to the corporate tax rates. Second, the conservative party N-VA considered the prohibition to apply the Belgian notional interest deduction (NID) under CCCTB regrettable, whereas the socialist party sp.a. welcomed this decision (Belgian Chamber of Representatives, 2011a).

Eventually, the CFB reached a consensus on the advice of the Belgian Parliament concerning the subsidiarity and proportionality of the CCCTB proposal. The advice of the CFB was approved with 12 votes in favour and 4 abstentions[65]. In the text, it was mentioned that the subsidiarity principle was not violated as the EU would be more appropriate to achieve the objectives of CCCTB compared to Belgium. In particular, when applying a CCCTB the EU would be able to abolish fiscal obstacles hampering growth in the internal market and limit the negative impacts of tax competition. With respect to the principle of proportionality, the CFB did not express its view yet. Pending its decision, it asked for a detailed impact study carried out by the Belgian federal government. In particular, the study should look to what extent the impact of CCCTB would be related to the openness and size of a country as well as the size of companies opting for CCCTB. The study should also examine to what extent the introduction of CCCTB would lead to additional costs resulting from the existence of two different corporate tax systems and the need to keep separate fiscal accounts. Moreover, the CFB stressed the importance of studying the impact of CCCTB on Belgium's economic growth, employment and social protection. Also the advantages and disadvantages of the optionality of CCCTB should be examined in detail, as well as the opportunity to harmonize national corporate tax rates (Belgian Chamber of Representatives, 2011a).

[65] No individual vote outcomes were made public.

4.4.2 European Parliament

Immediately after the announcement of the EC's proposal for a CCCTB in March 2011, the proposal was transferred to the European Parliament (EP). At that moment, the EP consisted of 754 elected members spread over seven European political parties and a group of independents[66]. According to Article 115 of the Treaty on the functioning of the European Union (TFEU), the consultation procedure applies to decisions concerning direct taxation such as the CCCTB. This 'special legislative' procedure describes the EP's role as a consultative one (EP, 2014). So, it could be argued that the EP's opinion about CCCTB is not binding[67]. However, the consultation procedure would also imply that the members of the EP were not inhibited to express their real opinion.

Each member of the EP (MEP) was invited to introduce amendments to the proposal. In total, 425 amendments were submitted. As Belgium is the focus of this paper, we only mention the 14 amendments which were submitted by the Belgian member Philippe Lamberts. At that time, he was vice-chairman of the Greens-European Free Alliance (EP, 2011). In summary, these 14 amendments dealt with five subjects. First, the Belgian member was a proponent to introduce a minimum tax rate of 15% in 2013, 20% in 2015 and 25% in 2017. Second, CCCTB should be compulsory except for SMEs. Third, CCCTB should provide for an additional EU corporate income tax of 5% applied to big companies as a resource to support poor regions within the EU. Fourth, losses incurred before the introduction of CCCTB should be disregarded and the carry forward of new losses should be limited to five years. Finally, a third country would be considered as a tax heaven if its tax rate would be below 100% of the average statutory rate in the EU (EP, 2011). The demands to introduce a minimum tax rate and mandatory CCCTB were also claimed by the respresentative of the Belgian Green party in the CFB (see section 4.4.1).

Considering all 425 amendments submitted in the EP's Committee on Economic and Monetary Affairs, Belgian rapporteur Marianne Thyssen finally adapted the initial EC's proposal by including 38 amendements.[68] We mention the most striking amendments of Thyssen's text[69] (EP, 2012a). First, a

[66] Parties of the seventh European Parliament: European United Left-Nordic Green Left (GUE-NGL), the Greens-European Free Alliance (Greens/EFA), Progressive Alliance of Socialists and Democrats (S&D), Alliance of Liberals and Democrats for Europe (ALDE/ADLE), European People's Party (EPP), European Conservatives and Reformists (ECR), Europe of Freedom and Democracy (EFD) and the Non-Inscrits or independents (NI).

[67] Kardasheva (2009) studied consultation procedures in the EP over the period 1999-2007. The results showed that the EP would become more influential when it gets support from the EC. On 19 April 2012, the EC largely agreed with the amended CCCTB proposal of the EP.

[68] No information was made public on the selection (discussions and voting results in the EP) of the individual submitted amendments. The third and fourth demand of the Belgian member of the European Greens party was not taken into consideration in the final text of Marianne Thyssen.

mandatory CCCTB was recommended for all companies except SMEs, whereas the EC originally proposed an optional system for all companies. Nevertheless, a brief transition period of two years would be provided for companies and cooperatives which operate by nature cross-border and a transition period of five years for all other companies except SMEs. Another remarkable amendment was the introduction of a more strict general anti-abuse rule. In particular, Article 80 of the EC's proposal was adjusted by formulating that "artificial transactions carried out *mainly* instead of solely for the purpose of avoiding taxation should be ignored for purposes of calculating the tax base" (EP, 2012a, p. 20). With respect to specific anti-abuse rules such as interest deductions, the Commission defined a third country as a tax heaven if the corporate tax rate was below 40% of the average statutory tax rate in the EU. In Thyssen's text, however, the rate was increased to 70% of the average tax rate. A third amendment dealt with the design of the apportionment formula. A formula was proposed where sales by destination, labour and assets were weighted at 10%, 45% and 45% respectively, while the EC proposed a sharing formula in which these factors were equally weighted. It was argued that the adjusted formula would guarantee that exporting countries would not be disadvantaged in the apportionment. With respect to the applied tax rates, the text mentioned that CCCTB should not introduce a harmonised corporate tax rate. However, a clause was included stating that the option of minimum rates should be left open in case it "became apparent that the economic efficiency, effectiveness and equitability of corporate taxation would benefit from an introduction of minimum rates." In the text of Thyssen, it was also written that the procedure for enhanced cooperation should be started up if the Council failed to decide unanimously on CCCTB (EP, 2012a, p. 10).

INSERT TABLE 3

During the debates on 18 April 2012, the representatives of the European parties recommended how to vote on the proposal of rapporteur Thyssen on the next day. Thyssen opened the debate as follows (EP, 2012b):

> "…With this CCCTB, we will be making it fiscally simpler and administratively cheaper for companies to develop transnationally, which will definitely open up new opportunities for SMEs. Moreover, we will be making taxation more transparent. We will be preventing overtaxation and double taxation, as well as manipulation undertaken for the purpose of tax evasion. And, we will undoubtedly be making Europe more attractive for foreign investors…''

Table 3 gives an overview of the opinions of the several European parties. In line with the study of Hix and Noury (2009), we rank the political parties from the most left to the most right party. In general, representatives of the Greens, S&D, ALDE and EPP advised to vote positively on the

[69] For a complete overview we refer to EP (2012a).

proposal. By contrast, representatives of the right parties ECR and EFD advised to vote negatively on the proposal. The opposition of the right parties suggests evidence for the aversion of right parties to more European integration and a more strict government regulation. Going into more detail, all parties discussed the impact of tax competition under CCCTB. According to the left and centrist parties, a harmonization of the tax bases would lead to a healthier tax competition, thereby increasing the efficiency of the internal market. However, the S&D stressed that the disregarding of a minimum tax rate was a lost opportunity. Right parties declared that the EU should not intervene as tax base competition between members states would be good in terms of efficiency. During the debate, no reference was made to the results of specific economic impact studies. The Greens, S&D and EPP agreed that the introduction of a mandatory CCCTB would increase the legal certainty as tax minimizing behaviour of companies would be decreased and the administrative burden for member states reduced. By contrast, ALDE casted doubts on this decision and ECR and EFD were opponents of a mandatory system. Finally, ALDE mentioned that a smaller weight on the sales by destination factor would create a more fair allocation for countries with a big export sector (EP, 2012b).

INSERT TABLE 4

On 19 April 2012, this proposal was approved in the EP with 452 votes in favour (68%), 172 against (26%) and 36 abstentions (5%) (VoteWatch Europe, 2012). Members from Bulgaria, the Czech Republic, Hungary, Ireland, Malta, Poland and Great Britain were the most sceptical about the amended CCCTB proposal as more than 50% of their votes were 'no' votes. When looking at Table 4, 18 of a total of 22 Belgian MEPs voted 'yes', 2 voted 'no' and 2 were absent. In general, 82% of the Belgian MEPs were positive about CCCTB. In line with the study of Hix and Noury (2009), the variable 'party left right' ranks the political parties from 1 being the most left and 7 being the most right party[70]. Table 4 shows that all present MEPs followed the European parties' advice (see Table 3) on how to vote on the CCCTB proposal. In particular, Belgian MEPs of the Greens, S&D, ALDE and EPP voted positively, whereas a member of the ECR voted negatively. Two members were absent at the day of the voting, namely one member of the Greens and one member of the EFD party.

Beside the declarations of the European parties' representatives, two Belgian members made an additional statement during the debates in the EP. Vice-chairman of the Greens party Philippe Lamberts declared (EP, 2012b):

> "I believe, Ms Thyssen that you have gone as far as you can if you wish to gain a large majority for CCCTB in this Parliament … it is unthinkable for us to establish a voluntary 28th corporate tax system alongside the 27 Member State systems, as evidently who will use it if it is optional, other than companies for whom it

[70] Independent MEPs are considered as far right oriented (Hix and Noury, 2009).

would constitute a lower effective tax rate than if they were to use their national system? Indeed, I think that it is essential to make this system obligatory for large companies".

Derk Jan Eppink, the Belgian vice-chairman of the ECR who voted negatively, explained his choice as follows (EP, 2012b):

"…When Member States collect corporation tax from companies operating in several Member States, they have to divide the revenues between them. The allocation key which the Commission has devised for this purpose adversely affects competitive and exporting countries. They are fiscally punished and lose revenue from corporate tax … and, yet, we have not carried out any thorough research into the fiscal effects of the allocation key proposed by the Commission … I therefore say: I am not going with this…"

4.4.3 Council of the European Union

The final decision on the adoption of a CCCTB, however, rests with the Council of Ministers of the European Union or in short the Council. On 13 March 2013, the Irish Presidency of the Council held a High Level Working Group Party Meeting about CCCTB. All member states committed to engage in the technical discussions even if they were opponents of corporate tax harmonization. The outcome of this meeting was a roadmap for the future technical discussions on the EC's proposal. All member states agreed to conduct the technical work on a 'step-by-step basis'. Basic elements of the tax base would be discussed first, whereas international issues and issues related to consolidation and apportionment would be left aside and addressed at a later stage (EC, 2014).

Under the Irish Presidency, Chapter VI 'Depreciation of Fixed Assets' and Chapter VII 'Losses' of the EC's CCCTB proposal were discussed. The Lithuanian Presidency built on the Irish Compromise proposal and examined parts which were not considered yet, namely, chapter IV 'Calculation of the Tax Base', Chapter V 'Timing and Quantification' and Article 80 'General anti-abuse rule'. As an example, Appendix 1 summarizes the discussion of Chapter VI 'Depreciation of Fixed Assets.' We included this chapter as the willingness to discuss on this part was the greatest. Important to mention is that the compromise texts should not be considered to be the final views of member states. Because of confidentiality, the compromise texts of the Council do not elaborate on the individual positions adopted by member states (Council of the European Union, 2013a, 2013b, 2013c).

With respect to the position of the Belgian government, explanations by the previous and current governments are scarce. Several parties in the Belgian Parliament criticized the lack of communication of the Belgian government concerning its position on CCCTB and the lack of information on the developments taking place in the Council (see Table 2). In the Belgian Senate, however, Minister of Finance Koen Geens (CD&V) declared the following in 2013 (Belgian Senate, 2013, p. 5):

"…Belgium defends the European project of the Common Consolidated Corporate Tax Base and will support any project with the aim to ameliorate the current tax situation…''

Other explanations in the Parliament show that the Belgian government rather takes a wait and see attitude and looks at the positions of big countries, especially France and Germany, by which it maintains close economic relations (Belgian Senate, 2012). In August 2011, German Chancellor Merkel and former French President Sarkozy revealed their intention to introduce a common corporate tax base and tax rate (Paris, 16th August 2011). At that time, Belgian Minister of Finance Steven Vanackere (CD&V) declared (Belgian Senate, 2012, p. 9):

> "…Before we support the French-German cooperation, experts need to investigate to what extent the content of this proposal is in line with the CCCTB proposal. Belgium will not introduce a system that would subvert the European project. In case Belgium decides to join the French-German initiative, it will submit amendments if desired…"

Documents of Ihli (2011) and De Vos (2012) give a more detailed insight into the Belgian views at the level of the articles mentioned in the EC's proposal. In spite of its supportive attitude, the Belgian tax administration made several comments to the proposal, which are summarized in Table 5.

INSERT TABLE 5

The Belgian tax administration has the opinion that the definition of a permanent establishment (PE) could lead to difficulties in relation with third countries when taking into account the existing network of Double Tax Agreements (DTAs). For example, according to *Article 5* of the EC's proposal "A building site or construction or installation project should constitute a PE only if it lasts more than twelve months" (EC, 2011, p.20). A DTA between Belgium and a third country, however, could determine a PE if it lasts more than six months. According to *Article 11(e)* of the EC proposal all "income of a PE in a third country would be exempt from corporate tax" (EC, 2011, p. 23). For Belgium it is unclear if exempted income would relate to the gross or net income of the foreign PE. Another problem deals with the application of the switch-over clause as described in *Article 73*. Article 73 states that received profit distributions, proceeds from a disposal of shares and income of a PE in a third country cannot be exempt if it originates from a third country where "tax on profits are taxed at a statutory rate lower than 40% of the average statutory corporate tax rate applicable in the Member States" (EC, 2011, p.43). However, several Belgian DTAs will only refuse exemption if no effective taxation has taken place in the third country, i.e. the 'subject to tax rule'. Further, *Article 14(1) g)* mentions that "costs incurred by a company for the purpose of deriving foreign PE income which is exempt to Article 11; such costs shall be treated as non-deductible and be fixed at a flat rate of 5% of that income" (EC, 2011, p. 23). The Belgian tax administrator wonders how the 5% of income would be calculated. Also, the prohibition to deduct expenses related to foreign PE would be in conflict with the double tax treaties. Belgium agrees with *Article 31* stating that a transfer of an asset towards a third country should be taxable. However, it remains unclear if a transfer of an asset

from a PE outside the EU towards another PE outside the EU would be covered by the current article. (Ihli, 2011; De Vos, 2012).

The Belgian tax authority also criticises articles which are not dealing with foreign PEs. According to *Article 11* subsidies of fixed assets subject to depreciation *(a)* and proceeds from the disposal of pooled assets *(b)* are exempt from corporate tax. However, Belgium has the opinion that they are effectively taxed over the depreciation period as the amount of the subsidies and proceeds diminishes the basis on which the depreciations of the assets are calculated. *Article 14(1) j)* mentions that all local taxes which raise more than 20 % of the total amount of corporate tax in the member state are non-deductible expenses. For Belgium, this implies that registration duties are non-deductible. Nevertheless, Belgium doubts whether registration duties paid by corporations are more than 20% of the total corporate tax. It believes that the Commission has taken into account the total amount of registration duties.[71]According to *Article 26* pension provisions will be estimated using actuarial techniques and by reference discounted to Euribor for obligations with a maturity of 12 months. These provisions can be deducted without any limitation. As several European countries disallow pension deductions or limit these deductions, the Belgian tax administration believes the national legislation should apply. In case of a CCCTB group, the deduction of pension provisions should be applied to the apportioned share of the group members resident in that country. *Article 76* mentions that received interest and royalties may be deducted from the tax liability when they have been taxed in another member state or third country. Belgium finds this article too generous and proposes to introduce specific anti-abuse provisions which prohibit the creation of artificial constructions between CCCTB companies and third parties with the sole aim to obtain the tax deduction. Finally, *Articles 102* and *103* of the EC proposal forbid any additional deductions from the apportioned profit. For Belgium, this means that national tax incentives like the notional interest deduction, patent income deduction and investment deduction are lost for CCCTB groups (Ihli, 2011; De Vos, 2012).

Current tax law literature on CCCTB (section 4. 2.3) has shown that several difficulties appear with the interpretation of concepts and that many conflicts exist between CCCTB and the DTCs, which would be problematic to ensure legal certainty. In brief, the majority of Belgian comments in Table 5 are dealing with these problems. In particular, incompatibilities occur with respect to articles concerning foreign PEs. In response to these conflicts, the Commission obliged member states to renegotiate all DTAs in order to align them with the CCCTB rules (EU, 2012, Art. 351). For Belgium, this would imply that almost all DTAs would have to be renegotiated, leading to a considerable amount of compliance costs (De Vos, 2012). In addition, Table 5 suggests that Belgium seems to worry about the preservation of the corporate income tax revenues (see e.g. Art 26, Art. 76) and that Belgium wants to remain attractive for domestic and foreign investments (see e.g. Art 14, Art. 102-

[71] In Belgium registration duties not only apply to companies, but also to other legal persons and physical persons.

103). In 2006, Belgian Minister of Finance Didier Reynders (MR) already expressed these concerns (Belgian Senate, 2006, p. 6500):

> " … several member states like Belgium fear that the introduction of a CCCTB will have a negative impact on the national corporate tax rates and *mutatis mutandis* on the national budget of several member states. This would be caused by a loss of corporate income taxes on the one hand and the negative impact of abolished systems on the economy on the other hand. In addition, it would not be allowed for member states to apply fiscal incentives like the NID to enhance the competitiveness of their economy. In the long run, this would harm a healty tax competition… also, Belgium wonders if the national tax administrations are able to cooperate in an efficient way to collect and control corporate taxes…'

In order to adopt CCCTB, unanimity by the Council is required but the Treaty on the functioning of the European Union (TFEU) includes articles (Art. 20(2), 82, 329(1)) which allow CCCTB to be introduced under the 'enhanced co-operation procedure'. Enhanced cooperation is a procedure where a minimum number of nine member states could introduce CCCTB. In 2011, Didier Reynders declared that Belgium would like to participate, but only if its neighbouring countries would join the system (Belgian Chamber of Representatives, 2011b, p. 32):

> '… if not all countries of the EU could reach a consensus, a fiscal harmonisation between a limited number of countries would already be a positive evolution…if it would be possible to reach a fiscal harmonisation with Germany and France, so why not for the Benelux?...'

4.5 Conclusions and discussion

On 16 March 2011, the European Commission (EC) launched its long-expected proposal for a Common Consolidated Corporate Tax Base (CCCTB). By harmonizing the corporate tax bases in Europe, the EC has the intention to remove the tax obstacles currently harming the international competitiveness of European companies. Since the launch of CCCTB, some remarkable developments took place at the political level. Shortly after the publication of the CCCTB proposal, all national parliaments had the right to assess whether the CCCTB proposal complied with the general principles of subsidiarity and proportionality. On 19 April 2012, the Members of the European Parliament (MEPs) voted on the EC's proposal for a CCCTB. At present, the EC proposal is negotiated in the Council which has final decision power on the introduction of a CCCTB.

Using documentation and archival records, this paper applied case study methodology to describe and discuss the views of Belgian politicians on CCCTB in the Belgian Parliament, the European Parliament and the Council of the European Union. When describing these views, it was analysed to what extent and how Belgian politicians used macro-economic, legal or ideological arguments to found their opinion about CCCTB.

In May 2011, Belgian politicians examined the subsidiarity and proportionality principle of CCCTB in the Commission of Finance and Budget of the Belgian Parliament (CFB). Most members of the CFB

found that these principles were generally not violated, except for members of the Walloon liberal and christian-democratic parties. During the discussions, all members referred to the macro-economic impact of CCCTB to defend their interests. Some spoke in general terms whereas others picked out results of specific impact studies. Further, all members agreed that CCCTB should be mandatory as the legal enforcement of an optional system would imply high compliance costs for tax administrations. It was also agreed that the proposed allocation factors were not fair as they would harm knowledge and service based open economies. Despite these agreements, members belonging to right parties would only harmonize the national corporate tax bases, whereas members of left and center parties would extend European integration by introducing a harmonized tax rate, a minimum tax rate or range of tax rates. Further, right parties regretted the prohibition to apply the notional interest deductions (NID), whereas left parties welcomed this decision.

On 19 April 2012, 22 Belgian politicians voted in the European Parliament on the EC's proposal, which was adapted by including 38 amendments. The most striking amendments were the proposals to introduce a mandatory CCCTB, to apply more strict anti-abuse rules and to reduce the weight on the sales by destination factor. Further, the option to introduce a minimum tax rate should be left open. In general, 82% of the Belgian members voted positively on the amended CCCTB proposal. A striking finding was that all Belgian members followed their European parties' vote advice. In particular, Belgian members of the green, socialist, liberal and christian-democratic parties voted positively, whereas the member of the right party ECR voted negatively. The opposition of the right parties suggested evidence for the aversion of right parties to more European integration and a more strict government regulation. Members of right parties declared that the EU should not intervene as tax base competition between members states would increase efficiency. Members of left and centrist parties declared the opposite. However, the socialists found the disregarding of a minimum tax rate a pitty. Further, to increase legal certainty, members of left and centre parties preferred a mandatory CCCTB, whereas conservative members were opponents of an imposed system.

Concerning the views of the current and previous Belgian Ministers of Finance in the Council, explanations are scarce. The few explanations showed that the Belgian Ministers defended CCCTB but took a wait and see attitude and looked at the positions of neighbouring countries. Also analysing the documents of Ihli (2011) and De Vos (2012), we found that they worried about the preservation of corporate tax revenues and the attractiveness of Belgium for investors (e.g. NID). In addition, they criticized the international aspects of CCCTB, especially the incompatibilities between CCCTB and existing DTAs Belgium concluded with foreign countries. The renegotiations of these DTAs would lead to high compliance costs.

In general, analysing the views of Belgian politicians on CCCTB in the Belgian Parliament, European Parliament and the Council, our findings indicate that a big majority of Belgian politicians were proponents of CCCTB. During the discussions in each of the political institutions, the politicians used

macro-economic, legal and party ideological arguments to underpin their opinion. The same discussion items reappeared and only slightly differed in form and content. Figure 1 summarizes the major insights generated by this case study.

INSERT FIGURE 1

To the best of our knowledge, in-depht case studies examining the political views of a particular country on CCCTB are lacking. This Belgian case study attempt to draw an overall picture and describes to what extent and how Belgian politicians were influenced by macro-economic, legal and ideological perspectives. Current literature about CCCTB typically approaches this new tax system from the economic (e.g. Oestreicher and Koch, 2011) or legal perspective only. (e.g. Lang et al. , 2013). However, this study suffers from a few shortcomings. First, we assumed that the politicians' personal ideological beliefs corresponded to those of their party. However, Hines (2002) showed that these beliefs could deviate from each other. Moreover, we did not take into account other individual characteristics like age, gender or education. Surveys investigating individual factors influencing the opinion about CCCTB would be an interesting contribution to the literature. Second, even though case studies do not allow to generalize our findings, we are convinced that these findings are relevant to most of the EU countries. Discussing the Belgian point of view is useful as Belgium probably will be part of future negotiations under the enhanced cooperation procedure. Nevertheless, similar case studies in other EU-countries could investigate the robustness of our findings. In addition, combining this qualitative research with quantative research would draw a full picture of this political point of view.

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Table 1: Summary results of empirical impactstudies CCCTB (in %)

		Oestreicher and Koch (2011)		EC study Bettendorf et al. (2011)		E&Y Cline et al. (2011)	
		optional	compulsory	optional	compulsory	optional	compulsory
revenues							
	BE	-10.66 (-)	-3.33 (-)	n.a.	0.27 (+)	-1.10 (-)	2.10 (+)
	EU	-4.65 (-)	-4.56 (-)	0.00	0.06 (+)	-0.60 (-)	0.20 (+)
welfare							
	BE			1.21 (+)	1.11 (+)		
	EU			0.02 (+)	0.02 (+)		
employment							
	BE			-0.16 (-)	-0.50 (-)	0.00 (+)	0.10 (+)
	EU			0.00	-0.05 (-)	-0.10 (-)	-0.30 (-)
GDP							
	BE			2.10 (+)	0.92 (+)	-0.10 (-)	0.10 (+)
	EU			-0.15 (-)	-0.25 (-)	-0.10 (-)	-0.20 (-)
investments							
	BE			-2.89 (-)	-4.82 (-)	-0.20 (-)	0.50 (+)
	EU			-0.74 (-)	-1.25 (-)	-0.50 (-)	-1.10 (-)

Table 2 Summary of Belgian views about CCCTB in the CFB (Belgian Chamber of Representatives, 2011a)

Political parties	Subsidiarity and proportionality	(i) Macro-economic effects	(ii) Corporate Tax Rate
Greens			
Ecolo-Groen!	Doubts about principles of proportionality and subsidiarity	Reference to EC impact study (SEC(2011) 315) for Belgium with respect to taxable basis (-25%), employment (-1.12%) and foreign investments (-5.92%)	Introduce harmonized tax rate to avoid fiscal shopping of companies.
Socialists			
sp.a	CCCTB in accordance with principles of proportionality and sub sidiarity	Reference to E&Y study Cline et al. (2011). Positive impact of a compulsory CCCTB concerning tax revenues and employment for Belgium.	Introduce minimum tax rate or tax fork to avoid tax competition between countries
PS		CCCTB can contribute to efficiency	Introduce a tax fork to avoid fiscal dumping
Liberals			
Open VLD		Belgian government has to study the impact of CCCTB on the Belgian economy.	Introduce a tax fork
MR	Not in line with principles of proportionality and subsidiarity. More information needed.	CCCTB will lead to smaller tax revenues for Belgium and less competitive companies. Reference to EC impact study (SEC(2011) 315) for EU with respect to GDP (-0.2%)	
Christian Democrats			
CD&V			
cdH	Not in line with principles of proportionality and subsidiarity. More information needed.	CCCTB will lead to smaller tax revenues for Belgium and less competitive companies	
Conservatives			
N-VA	Doubts about principle of proportionality	CCCTB must be competitive and increase GDP Reference to EC impact study (SEC(2011) 315) for Belgium with respect to welfare (+1.21%), employment (-0.16%), investments (-2.89%) and GDP(+2.10%)	Tax rate competition could be positive Tax rate should stay under the sovereignty of individual countries
Far Rights			
VB		CCCTB can contribute to a more efficient market	Tax rate should stay under the sovereignty of individual countries Tax rate competition could improve competitiveness of the EU

Table 2 Continued Summary of Belgian views about CCCTB in the CFB (Belgian Chamber of Representatives, 2011a)

Political parties	(iii) Optionality	(iv) Characteristics country	(v) Other issues
Greens			
Ecolo-Groen!	Introduce a mandatory CCCTB Two corporate tax systems imply high compliance costs for tax administrations	Apportionment formula favours old industrial economies at the expense of knowledge based open economies Factors assets and sales can be shifted by companies	Better cooperation between tax administrations is necessary to control and collect corporate income taxes.
Socialists			
sp.a	Introduce a mandatory CCCTB. Two corporate tax systems imply high compliance costs for tax administrations.		Belgian Minister of Finance does not inform about development CCCTB at European level, e.g. view of Belgian governemnt and other countries? Prohibition of NID and patent deduction is positive for tax revenues
PS	Introduce a mandatory CCCTB with short transition period of optionality. Two tax sytems imply high costs for tax administrations	Small countries need to be protected against big countries.	The administrative 'one-shop' system involves uncertainty Control of different tax administrations needs to be efficient The aspects of social protection and social achievements are very important, for example employment
Liberals			
Open VLD	Introduce a mandatory CCCTB, except for SMEs. SMEs do not have resources for tax optimization. Study needed on compliance costs.		What is the opinion of the Belgian Minister of Finance about CCCTB?
MR	Two corporate tax systems imply high compliance costs for tax administrations and companies	CCCTB is disadvantageous for service based economies. Factors as intangible assets and financial assets are not included in the formula.	Countries should be able to choose for CCCTB or not
Christian Democrats			
CD&V	Two corporate tax systems imply high compliance costs for tax administrations and companies		Harmonization with respect to social security is also important to achieve economic growth and employment.
cdH		CCCTB is disadvantageous for small and open economies.	Countries should be able to choose for CCCTB or not
Conservatives			
N-VA		Apportionment formula favours old economies at the expense of knowledge and service based economies Factors as intangible assets and financial assets are not included in the formula.	Consolidation and tax declaration in country of parent company, this could be disadvantageous for Belgium. The NID has increased the equity of Belgian companies. High compliance costs for companies as a result of a separate bookkeeping system and corporate tax system. Belgian Minister of Finance does not inform about development CCCTB at European level
Far Rights			
VB			CCCTB can contribute to administrative simplification and more legal certainty

Table 3 Summary of views about CCCTB proposal in the EP (EP, 2012b)

	Arguments	Vote Advice CCCTB
Greens-European Free Alliance (Greens/EFA)	Mandatory CCCTB for big companies is good decision. Companies will use optionality to optimize tax payments Important that proposal will also be adopted in the Council.	positive
Progressive Alliance of Socialists and Democrats (S&D)	Mandatory CCCTB for big companies is good decision. Companies will use optionality to optimize tax payments Harmonization of tax bases good to avoid harmful tax competition in the EU. Proposal does not include a minimum tax rate, which is a pitty. However, a clause is included stating that this will be re-examined	positive
Alliance of Liberals and Democrats for Europe (ALDE/ADLE)	Harmonization of taks bases will improve efficiency of internal market Proposal will ease administrative burden for companies to invest cross-border. Doubts if mandatory CCCTB is the right decision No big weight on sales by destination is good decision. This is more fair for countries with big export sector.	positive
European People's Party (EPP)	Mandatory CCCTB for big companies is good decision. CCCTB will remove tax obstacles and will lead to a healther tax competition between member states	positive
European Conservatives and Reformists (ECR)	Tax competition is good. A clause to harmonize tax rates is unacceptable CCCTB should be voluntary Has many other observations	negative
Europe of Freedom and Democracy (EFD)	Harmonization is stealing from wealth-creating sectors. CCCTB is like a vampire sucking the lifeblood of the economy. CCCTB would banish manufacturing to the Far East and the Indian subcontinent.	negative

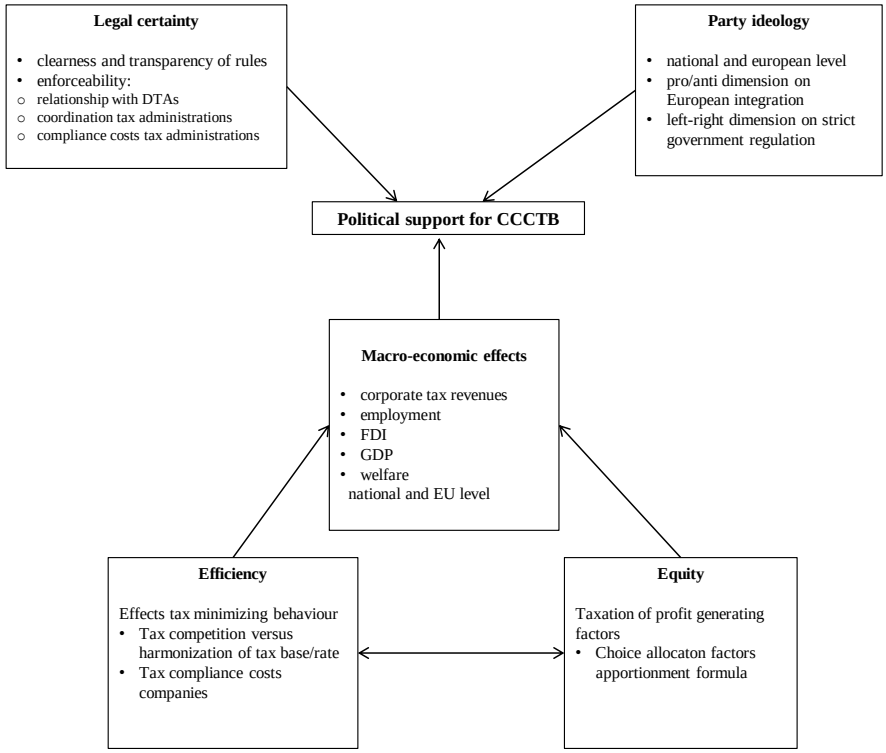
Table 4 Voting results CCCTB of Belgian MEPs

N=22	Total	GUE-NGL	Greens/EFA	S&D	ALDE/ADLE	EPP	ECR	EFD	NI
Vote									
yes (82%)	18	0	3	5	5	5	0	0	0
no (9%)	2	0	0	0	0	0	1	0	1
abstain (0%)	0	0	0	0	0	0	0	0	0
absent (9%)	2	0	1	0	0	0	0	1	0
Party left-right		1	2	3	4	5	6	7	7

Table 5: Overview objections of Belgian government to CCCTB proposal (Ihli (2011); De Vos (2012))

Proposal on a CCCTB Directive (EC,2011)	Belgian comments
Articles conflicting with Belgian Double Tax Agreements (foreign countries)	
Art. 5 Foreign PE definition	incompatible with existing DTAs
Art. 11(e) Exempt income foreign PE	unclear article
Art 14(1) g) Non-deductible costs foreign PE	unclear article
Art.31 Transfer of assets to foreign PE	unclear article
Art. 73 Switch-Over clause	overruled by existing DTAs
income foreign PE	
foreign dividend income	
Other articles	
Art. 11 Exempt income; subsidies a) and proceeds of pooled assets b)	remove articles a) and b)
Art. 14(1) j) Non-deductible taxes listed in Annex III	remove article j)
Art. 26 Pension provisions	apply national deduction to apportioned share of tax base
Art. 76 Interest and royalties income taxed at source	introduce specific anti-abuse rules
Art. 102 and 103 Items deductible against the apportioned share	no room for national deductions like notional interest

Figure 1: Major insights.



Appendix 1: Chapter VI – Depreciation of Fixed Assets: Council compromise text (Council of the European Union, 2013b)

The table below gives an overview of all articles in Chapter VI – Depreciation of Fixed Assets included in the EC proposal on a CCCTB-Directive. The second column of the Appendix mentions the amendments on which member states agreed. We focus on Article 36 and 39 as these articles cover the core of Chapter VI, namely the method of depreciation. The CCCTB-Directive mentions four categories of fixed assets each subject to differing depreciation methods: " …Fixed assets shall be depreciated individually over their useful lives on a straight-line basis. The useful life of a fixed asset shall be determined as follows: a) buildings: 40 years; b) long-life tangible assets other than buildings: 15 years; c) intangible assets: the period for which the asset enjoys legal protection…or if that period cannot be determined, 15 years (Art. 36 EC, 2011, p. 32) d) …all other fixed assets shall be depreciated together in one asset pool at an annual rate of 25% of the depreciation base" (Art. 39 EC, 2011, p. 33).

The compromise text broadens the term buildings in Article 36 to 'other immoveable property' as member states believe buildings is too narrow. Further, a distinction is made between 'industrial buildings' wich are depreciated over 25 years and 'commercial, office and other buildings' which are depreciated over 40 years. Namely, several member states provide for a longer write off period for commercial and office buildings than for industrial buildings. In addition, the compromise text in Article 36 includes a new category of 'medium-life fixed tangible assets' with a useful life of 8 years or more and less than 15 years. This category will be depreciated over 8 years on a straight-line basis. This new category can be seen as a compromise between more individual asset depreciation on the one the hand and the retention of pooling on the other hand. The new category of medium assets would imply that asset pool in Article 39 would apply to assets with useful lives of less than 8 years. Keeping this in mind, the compromise text puts the pooling rate of depreciation of 25% between square brackets and member states will discuss this at a later stage. Finally, section c) of Article 36 has been put between brackets with the aim to postpone the discussion. For example, clarification is needed about the definition of intangible assets, the write off period and its valuation. (Council of the European Union, 2013b)

Appendix: Chapter VI - Depreciation of Fixed Assets: Council compromise text

CCCTB proposal (EC, 2011)	Compromise text
Art. 32 - Fixed Asset Register	New paragraph 2 suggesting that details of a disposal (date of disposal, income,…) should be included in the fixed asset register
Art. 33 - Depreciation Base	Third paragraph of Art 33(1) between square brackets; discussion about the treatment of indirect costs at a later stage
Art.34 - Entitlement to depreciate	Article between square brackets; discussion about rules relating to leasing at a later stage
Art. 35 - Depreciation of improvement costs	New paragraph 2 suggesting that the improvement costs can be depreciated over a shorter period if the remaining useful life of the asset is shorter than the original useful life of the asset
Art. 36 - Individually depreciable assets	Article 36(1)(a) The term buildings is expanded to also inlude 'other immoveable property'. A distinction is made between industrial buildings and commercial/office buildings. The write off period for industrial buildings equals 25 years and for commercial buildings 40 years - each on a straight-line basis. Article 36(1) (c) A new category of fixed assets of 'medium-life fixed tangible assets' with a useful life of 8 to 15 years is suggested; write off period 8 years on a straight-line basis Article 36(1) (d) Write-off period of intangibles between square brackets: to be discussed at a later stage
Art. 37 - Timing	No amendments to text
Art. 38 - Rollover relief for replacement assets	Art.38(1) reinvestment in an asset used for the same or similar business purpose; inclusion of the word business optional basis of relief instead of compulsory
Art. 39 - Asset pool	Art. 39 (1) Annual rate of 25% of the depreciation base placed between square brackets; to be discussed at a later stage
Art. 40 - Assets not subject to depreciation	No amendments to text
Art. 41 - Exceptional depreciation	Article between square brackets; to be discussed at a later stage
Art. 42 - Precision of categories of fixed assets	Article between square brackets; to be discussed at a later stage

Source: Summary based on Document 9180/13(FISC 80), Council of the European Union, 2 May 2013

Appendix 2

CFB members participating in CCCTB debates (Belgian Chamber of Representatives, 2011a)

Ecolo-Groen!	Muriel Gerkens
sp.a	Dirk Van der Maelen
PS	Christiane Vienne, Guy Coëme, Olivier Henry
Open Vld	Gwendolyn Rutten
MR	Philippe Goffin, Damien Thiéry
CD&V	Servais Verherstraeten
cdH	Josy Arens
N-VA	Veerle Wouters, Peter Dedecker, Steven Vandeput
VB	Hagen Goyvaerts

Belgian MEPs voting on amended CCCTB proposal (EP, 2012b)

Greens/EFA	S&D	ALDE/ADLE	EPP	ECR	EFD	NI
Frieda Brepoels	Frédéric Daerden	Philippe De Backer	Ivo Belet	Derk Jan Eppink	Frank Vanhecke	Philip Claeys
Isabelle Durant	Véronique De Keyser	Louis Michel	Jean-Luc Dehaene			
Philippe Lamberts	Saïd El Khadraoui	Annemie Neyts	Anne Delvaux			
Bart Staes	Marc Tarabella	Frédérique Ries	Mathieu Grosch			
	Kathleen Van Brempt	Guy Verhofstadt	Marianne Thyssen			

CHAPTER 5:

CONCLUSIONS

In March 2011, the EC published a proposal for a Council Directive on a Common Consolidated Corporate Tax Base (CCCTB), which can be considered as one of the most ambitious projects in the history of direct taxation within the EU. In particular, CCCTB would provide companies a single set of rules to determine their taxable profit instead of the different rules that exist in each Member State today. Moreover, groups would consolidate their taxable profits and allocate them to the individual companies by means of an apportionment formula (EC, 2011a). Despite the importance of this project, research on CCCTB is rather limited. However, more research should be required to assess the effects of CCCTB (Bettendorf et al., 2010).

This dissertation bundles three papers that investigate different aspects of CCCTB. The first paper explored to what extent the effective tax burden for an average Belgian company would differ when the common corporate tax base (CCTB) would be applied instead of the Belgian corporate tax system. The second paper investigated whether the proposed apportionment factors sales, tangible assets and labour are fair factors to allocate the common tax base among the different group members. In the third paper, the views of Belgian politicians about CCCTB in the Belgian Parliament, the European Parliament and the Council were analyzed and discussed.

In this final chapter, the main findings of this dissertation will be summarized. Further, the academic contributions and policy implications will be highlighted. Finally, the conclusion will discuss the limitations of this dissertation and the potential avenues for future research.

5.1 Main findings

The first dissertation paper examined to what extent the effective tax burden for an average company under a Common Corporate Tax Base (CCTB) would differ with its effective tax burden under the Belgian corporate tax system. To address this research question, the micro-simulation model European Tax Analyzer (ETA) was used over a 10 year simulation period (Spengel and Oestreicher, 2012). The ETA allows for a detailed assessment of all major elements forming the corporate tax base and sets up an explicit link between financial accounting and tax accounting. The results were remarkable and showed that the adoption of the proposed CCTB would increase the Belgian tax burden by 16% for an average large company and by 14% for an average SME. This finding was mainly driven by the fact that Belgian companies would not be allowed to apply the notional interest deduction under CCTB. In

addition, the CCTB applies less favourable depreciation and inventory valuation methods compared with the Belgian tax system. When varying the assumptions in the underlying economic model, the general finding of an increased tax burden under CCTB always applied. In addition, it was found that under both tax systems increasing profitability and equity lead to a higher tax burden, whereas an increasing capital intensity lead to a lower tax burden. When comparing the CCTB with the Belgian tax system, the tax burden under CCTB exceeded the Belgian tax burden the most when the company was characterized by low profitability, high capital intensity and high equity.

The second dissertation paper investigated to what extent the European proposed allocation factors are fair, i.e. to what extent do they represent profit generating activities. Moreover, the profit generating capacity of the alternative factor intangible assets was discussed and analysed. Nowadays, intangible assets represent an important and growing component of the total capital stock (Corrado et al. 2009). To answer these research questions, unconsolidated firm-level data from the Amadeus database were collected for the manufacturing and service sectors. A final sample of 12,027 non-listed companies was retained, containing complete information on the dependent variable profit before tax and the independent variables sales, tangible assets, cost of employees and number of employees. The main results showed that the European proposed allocation factors fixed tangible assets, labour and sales explained only 28% of the variation in profit. Further, the results indicated that the demand factor sales is the dominant factor in explaining profit and cost of employees is the most accurate labour factor. Adding intangible assets, as extracted from the balance sheets, did not increase the explanatory power of the model. This suggests that recognized intangible assets play a rather minor role in the generation of profit. Forming a sample of listed companies, the market premium, or the difference market value less book value of equity was used to proxy for unrecognized intangible assets. Adding the market premium significantly increased the explanatory power of the model. So, unrecognized intangibles tend to be important in explaining profit.

The third dissertation paper described and discussed the views of Belgian politicians on CCCTB in the Belgian Parliament, the European Parliament and the Council of the European Union. The purpose of this analysis was to gauge to what extent and how Belgian politicians used macro-economic, legal or ideological arguments to found their opinion. In general, the findings showed that a big majority of Belgian politicians were proponents of CCCTB. During the discussions in each of the political institutions, the politicians referred to the macro-economic impact of CCCTB, the legal enforcement of CCCTB and their party's view to underpin their opinion about CCCTB. The same discussions items reappeared and only slightly differed in form and content. In the Commission of Finance and Budget of the Belgian Parliament (CFB), all members agreed that CCCTB should be mandatory as the legal enforcement of an optional CCCTB would imply high compliance costs for tax administrations. It was also agreed that the proposed allocation factors were not fair as they would disadvantage knowledge based economies. Further, left parties would extend harmonization by introducing a harmonized tax

rate and abolish tax deductions like the NID, whereas right parties found these proposals too far-reaching. During the discussions in the CFB, members referred to specific impact studies to defend their opinion. In the European Parliament, Belgian members of left and centrist parties voted positively on CCCTB, whereas members of right parties voted negatively. Left and centrist members preferred a mandatory CCCTB, whereas right members were opponents of an imposed system. Further, members of right parties found that the EU should not intervene as tax base competition between member states would increase efficiency, whereas the other members declared the opposite. In the Council, previous Belgian Ministers of Finance defended CCCTB but were not pioneers. Despite their positive attitude, they were worried about the preservation of corporate tax revenues, the attractiveness of Belgium for investors and the incompatibilities between CCCTB and the Double Tax Agreements (DTAs) Belgium concluded with third countries.

5.2 Academic contributions

This dissertation contributes to several streams of literature. The first paper of this dissertation contributes to the *impact assessment literature*. Prior research has primarily focused on the economic impact of a full CCCTB, i.e. a common corporate tax base with consolidation and apportionment (e.g. Bettendorf et al., 2011; Oestreicher and Koch, 2011; Runkel and Schjelderup, 2011). In general, the results have shown that the variation of effects across countries is large and highly dependent on the choice of the apportionment formula. Besides this dissertation, only two studies have examined the economic impact of a CCTB, i.e. a CCCTB without consolidation and apportionment (Haverals, 2007 and Spengel et al., 2012). Considering a CCTB instead of a CCCTB would be more realistic for three reasons. First, the EC proposal lacks clarity about the technical details of consolidation and apportionment. Second, the member states' support for CCCTB is low (Herzig and Kuhr, 2011). Third, literature shows that the apportionment factors would be manipulated by companies (e.g. Nielsen et al., 2010). The study of Haverals (2007) has shown that the application of CCTB would broaden the tax burden of Belgian companies by 3.8% to 14.6% depending on their sector. However, this older study relied on the preparing documents of the EC and used IAS/IFRS as a starting point instead of the autonomous tax accounting rules as defined in the EC proposal of March 2011. In line with the EC proposal, the study of Spengel et al. (2012) has simulated the effective tax burden for each European country. However, a limitation of this large-scale approach is that it was unfeasible to address all national tax regulations in great detail. The first dissertation paper contributes to this literature as it focuses on the impact of CCTB for Belgian companies in particular. In order to carry out these simulations, the latest version of the European Tax Analyzer (Spengel and Oestreicher, 2012) was extended. In particular, Belgian tax measures stimulating R&D were simulated and discussed. Additionally, tax incentives for SMEs like the increased notional interest deduction and reduced tax rates were implemented.

The second paper of this dissertation adds to the *apportionment formula literature*. Prior studies have mainly evaluated the CCCTB apportionment formula from an 'efficiency' point of view (e.g. Eichner and Runkel, 2011; Martini et al., 2014; Eberhartinger and Petutschnig, 2014; Kiesewetter et al., 2014). In particular, these studies investigated how the apportionment formula would influence the behaviour of companies as a response to tax minimization. In general, these studies showed that the apportionment formula would not prevent companies from shifting their profits to low tax member states. Within a US context, a few studies evaluated the apportionment formula from a 'fairness' point of view, i.e. these studies evaluated the profit generating capacity of the apportionment factors in the formula (e.g. Henszey and Koot, 1983; Sheffrin and Fulcher, 1984; Hines, 2008). It was found that the apportionment factors sales, property and labour actually reflected profit generating activities. However, Sheffrin and Fulcher (1984) and Hines (2008) stressed that the labour factor did a poor job in explaining profit and therefore a property and sales formula should be preferred. A shortcoming of the current literature is that alternative allocation factors are not taken into account. However, studies have shown that intangible assets represent an important and growing component of total capital stock and can be considered as the 'crown jewels' of the modern company (Corrado et al., 2009; Hellerstein, 2005; Hulten and Hao, 2008). Moreover, intangibles enhance firms' competitive advantage and performance (Gattai and Molteni, 2007; Marrocu et al., 2012). The second paper contributes to the apportionment formula literature by analysing and discussing the profit generating capacity of the alternative factor intangible assets. In addition, analysing the apportionment formula in a European context, a counterweight is offered to the dominant US literature. Contrary to the current literature, the second paper of this dissertation also considers SMEs as CCCTB would be available for all sizes of companies. CCCTB would especially benefit SMEs as they would incur less compliance costs when they would decide to expand their activities across the EU (EC, 2011a).

Finally, the third paper of this dissertation adds to the *political view about CCCTB*. Studies focussing on the political views in one particular country are lacking. The third dissertation paper fills this gap by describing and discussing the views of Belgian politicians on CCCTB in the Belgian Parliament, the European Parliament and the Council of the European Union. Although exceptional in the CCCTB literature, the *case study methodology* was chosen for this purpose. As CCCTB implies a complex political process of negotiations at several levels, the use of case study methodology was considered as more opportune in terms of gaining insights compared to other methodologies (Yin, 2003). In this dissertation, the case study methodology was applied to the specific case of Belgium as it is a representative case for open and small economies within the EU (Abraham, 1995). Additionally, Belgium is a plausible candidate for the procedure of 'enhanced cooperation' where a minimum of nine member states would introduce CCCTB (Belgian Chamber of Representatives, 2011). In the current literature, enhanced cooperation has been considered as a more realistic option as unanimity would be required in the Council to adopt CCCTB by the Union as a whole (e.g. Bettendorf et al.,

2010). So, investigating the political view about CCCTB in a Belgian context is valuable as this view would probably be relevant in the future negotiations on CCCTB. The third dissertation paper also contributes to the literature by examining which factors could influence politicians' views about CCCTB. In this respect, three streams of literature were considered to be relevant. First, several economic studies have assessed the macro-economic impact of CCCTB. However, these studies reported mixed results as the findings were dependent on the assumptions underlying the simulations (e.g. Bettendorf et al., 2011; Oestreicher and Koch; 2011). Second, studies in the field of political science have shown that left and centrist parties would be more supportive of projects towards more European integration and strict government regulation compared to right parties (e.g. Aspinwall, 2002; Hix, 2002). Third, tax law studies have found that problems of interpretation occur with the definitions in the CCCTB proposal. Moreover, conflicts exist between the CCCTB rules and the Double Tax Conventions (e.g. Lang et al., 2013). So, *combining* insights from *the economic, tax law and political science literature*, the third paper investigates to what extent and how Belgian politicians were influenced by the predicted macro-economic impact of CCCTB, the legal enforcement of CCCTB and their party's ideology when expressing their views about CCCTB.

5.3 Practical implications

The findings of this dissertation have several practical implications. According to the EC's proposal on CCCTB, intangible assets are excluded from the apportionment formula. In the EC, it was argued that intangible assets should not be included as it would be difficult to value and locate them. Moreover, companies could easily shift such assets to low tax countries (EC, 2006). So, intangibles were disregarded for reasons of simplicity and efficiency. However, using regression analysis, the second paper of this dissertation has shown that omitting intangibles from the apportionment formula is highly unsatisfactory from a fairness point of view. Nowadays, intangible assets represent a growing component of the total capital stock and enhance companies' profitability (Corrado et al. 2009; Marrocu et al., 2012). So, leaving out intangibles implies that one of the potentially most important profit generating factors would be ignored. Moreover, countries where intangible assets are abundantly present, have a strong claim to tax the profits associated with those assets. The findings of the second paper can inspire national governments to negotiate on a better balance between the efficiency and fairness of the apportionment formula in the Council. In this respect, the third paper of this dissertation has indicated that Belgian policy makers not only paid attention to the principle of efficiency, but also to the principle of equity when evaluating CCCTB. In particular, they considered the proposed apportionment formula as unfair as it would reduce corporate tax revenues of knowledge based economies. So, to increase the chance to reach a compromise in the Council, a well-balanced solution on the allocation of the common tax base would be necessary.

The results of the first paper on a Common Corporate Tax Base (CCTB) may be of interest to both business owners and policy makers. In particular, the adoption of a CCTB would increase the Belgian effective tax burden by 16% for an average large company and by 14% for an average SME. Assuming an optional CCTB, Belgian companies would not choose for this system as it would increase their current tax burden in the short-term. Further, the findings of the first paper showed that the biggest increase would occur for companies characterized by low profitability, high capital intensity and high equity. Under these circumstances, the favourable Belgian depreciation rules and the notional interest deduction would become more influential and increase the difference in tax burden under both tax systems. In order to encourage companies to choose for CCTB, Belgian policymakers could consider a number of options. First, the broadening of the tax base under CCTB would give the opportunity to reduce the corporate income tax rate under CCTB without changing the current tax income. As the statutory tax rate is an important determinant of location decisions (e.g. Devereux et al., 2002) this could have a positive impact on the attractiveness of Belgium for investors. Second, Belgian policy makers could devote themselves to allow national tax deductions and credits under CCTB. In particular, the prohibition to apply the notional interest deduction (NID) under CCTB remarkably increases the effective tax burden for Belgian companies. As there is a general interest for a European allowance for corporate equity (Parillo, 2012), lobbying for the allowance of the NID appears a feasible option. Finally, Belgian policymakers could decide to abolish all tax incentives under the Belgian tax system. Keeping the corporate tax rate unchanged, this would increase corporate tax revenues for Belgium in the short-term. However, abolishing these tax incentives could be harmful to the Belgian investment climate.

Finally, the third paper may provide valuable insights to policy makers as this paper analysed how Belgian politicians formed their opinion about CCCTB in the Belgian Parliament, the European Parliament and the Council. During the discussions in each of the political institutions, the politicians used macro-economic, legal and party ideological arguments to underpin their view. Even though the Belgian results cannot be generalized, it is likely that the opinion of politicians belonging to other EU-countries would also be influenced by economic, legal and ideological arguments. Further, the Belgian view will probably play a role in future negotiations under the enhanced cooperation procedure. In particular, the third paper showed that to reach an agreement in the Council, a compromise would be needed on several discussion items. First, a choice should be made between a mandatory versus optional CCCTB. Second, a decision should be made on the implications of corporate tax harmonization. More specifically, would harmonization entail a common corporate tax base or would it also include a harmonization of the corporate tax rates? Also, would there be room left for national tax incentives like tax deductions or tax credits? A third important decision would deal with the allocation of the common tax base. As countries worry about the preservation of corporate tax revenues, the application of a well-balanced apportionment formula would be necessary to reach an

agreement. Fourth, to increase the legal certainty of CCCTB, the potential misinterpretation of some articles should be solved. Moreover, conflicts between the rules of CCCTB and Double Tax Conventions should be removed. In the Council, a debate could, for example, be held on the development of a European Union-wide Double Tax Convention to eliminate these conflicts.

As a general policy implication of this dissertation the results of the three studies suggest that, at least in the short term, a CCTB without consolidation and apportionment would be a more achievable approach for Belgium than a CCCTB.

5.4 Limitations and avenues for future research

First, an overall limitation of this research is that the development of CCCTB is still in progress. To answer the research questions of this dissertation, this research had to rely on the EC's *Proposal for a Council Directive* on a Common Consolidated Corporate Tax Base (EC, 2011a). The final decision on the design of CCCTB, however, rests with the Council of Ministers of the European Union. The negotiations in the Council make progress, but at a slow pace. Until now, negotiations mainly dealt with issues related to the common tax base. Compromise texts of the Council showed that deviations from the EC's proposal would be plausible (Council of the European Union, 2013a, 2013b, 2013c). For example, Article 39 of the EC's proposal, which states that fixed assets with a useful life of less than 15 years would be depreciated in one asset pool, is resisted by several member states. In the compromise text, the asset pool would only apply to assets with a useful life of less than 8 years. So, if the Council manages to decide unanimously on CCCTB, the approved content could substantially deviate from the EC's proposal. Nevertheless, the purpose of this dissertation was to contribute to the discussions about the choices and desired developments of CCCTB. In this respect, the research findings are valuable to both academics and policy makers.

Second, a limitation of the European Tax Analyzer (ETA) used in the first paper is that the simulation results are dependent on the particular characteristics of the average company. However, a sensitivity analysis was applied to draw general conclusions. In particular, simulations were carried out for different economic model assumptions concerning profitability, equity and capital intensity. When varying the economic model assumptions, the general finding of an increased tax burden under CCTB always applied. Moreover, having such a high degree of detail in the model, allowed for a assessing the impact of the most relevant and complex provisions of the CCTB and Belgian tax code. So, the use of a detailed model is not always a disadvantage. Further, another shortcoming of the first paper is that the analysis only focused on the effective tax burden effects of a CCTB. However, when choosing for CCTB, companies would also consider tax compliance costs. In the impact assessment published by the EC (EC, 2011b), PwC gathered data from 17 multinational companies to estimate how a CCTB would impact tax compliance costs when compared with the current national tax systems in the EU. According to this study, tax compliance costs on average would increase by 3% under a CCTB

scenario. Also in the EC impact study (EC, 2011b), Deloitte estimated the level of compliance costs multinationals would face when establishing a new subsidiary under CCTB. The results show that tax compliance costs would neither increase or decrease in case of a CCTB. However, as studies in this field are scarce, future research is needed to draw a founded conclusion.

Third, in the second paper of this dissertation taxable profit was measured by profit/loss before taxation from the financial statements. We had to rely on this proxy as tax data are confidential and unavailable. Further, we used the market premium to proxy for unrecognized intangible assets. Notwithstanding that this variable is a catch-all variable, several studies suggest that the difference between a company's market value and its book value would to a great extent be due to intangible assets not reflected in the balance sheets (Lev, 2004; Whitwell et al., 2007). The findings of the third paper showed that the inclusion of the market premium significantly increased the explanatory power of the model, suggesting that unrecognized intangibles would be important in the generation of profit. So, from a fairness point of view, all intangible assets should be included in the apportionment formula. Consequently, future research should be directed towards practical solutions for valuing and locating intangibles. The study of Li (2002) suggested to include commercial (e.g. patents) and marketing intangibles (e.g. trademarks) and to value them at historic cost as this method would be easy to apply. For commercial intangibles, costs would entail expenditures on R&D and the cost of obtaining legal protection of the intangibles. For marketing intangibles, it would include costs of advertising and marketing. The market value of intangibles would to some extent be reflected in the sales by destination factor. With respect to the location of intangibles, intangibles would be allocated to the location where R&D activities would occur. Nevertheless, the study of Li (2002) is one of the few studies which focused on the treatment of intangibles in the apportionment formula. So, future research would be needed.

Finally, the last paper of this dissertation also suffered from a few shortcomings. First, it was assumed that the Belgian politicians' personal ideological beliefs corresponded to those of their party. These beliefs, however, could deviate from each other (e.g. Hix, 2002). Moreover, we did not take into account other individual characteristics like age, gender or education. So, surveys investigating individual factors influencing the opinion about CCCTB would be an interesting avenue for future research. A second limitation is that the findings of this Belgian case study are to some extent difficult to generalize to other countries. However, we believe that the findings are still valuable to most of the EU countries. To increase the robustness of the findings, similar case studies could be carried out for other EU countries. In particular, it would be interesting to investigate the opinion of EU countries willing to be part of the enhanced cooperation. As unanimity is required in the Council to adopt CCCTB by the Union as a whole, enhanced cooperation seems to be a more realistic option (Bettendorf et al., 2010). Studying the position of those countries willing to cooperate, would give a broad idea of how CCCTB would be put in practice. Finally, to draw a full picture of the political

view about CCCTB, the qualitative research of this final paper could be combined with insights from quantitative research. For example, following the voting literature (e.g. Faas, 2003; Hix et al., 2005), the votes outcomes in the EP (VoteWatch Europe, 2012) and future voting in the Council could be investigated for all EU countries. An advantage of such large-scale research is that it would offer the opportunity to control for country specific characteristics like a country's size, openness and time of entry into the EU.

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