

IS THE ITALIAN CORPORATE TAX REFORM GOING TO REDUCE FIRMS' TAX BURDEN? A MICROSIMULATION ANALYSIS

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Abstract

This paper analyses the impact of the corporate tax reform introduced in Italy at the beginning of 2004 on firms' tax burden. For this purpose we develop a microsimulation model reproducing the Italian corporate tax system. The model is based on an integrated dataset combining ISTAT (Italian National Statistical Office) survey data and published accounts data for corporations, for the year 2000. The empirical analysis consider two scenarios. The base-case scenario is represented by the corporate tax legislation existing in 2001 before the previously existing Dual Income Tax system was practically abolished, while the reformed scenario examines the full corporate tax reform passed in 2004. Simulation results show that the mean ex-post implicit tax rate after the reform increases by 0.26 percentage points. However, in spite of this overall result, we show that for firms belonging to groups, for which the reform introduces an optional consolidated tax statement, the new regime lowers the mean ex-post implicit tax rate by 1.08 percentage points.

JEL classification: H25, H32

Keywords: corporate tax reform, effective tax rates, microsimulation

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This paper originates from the authors' participation in the DIECOFIS (Development of a System of Indicators on Competitiveness and Fiscal Impact on Enterprise Performance) project financed by the *Information Society Technologies Programme* (IST-2000-31125) of the European Commission. The model presented here relies on micro-data data from the SCI and PMI ISTAT surveys and accounts data from the Chamber of Commerce, both available at the Italian National Institute of Statistics (ISTAT) within the DIECOFIS project. Data were used at ISTAT to run the model and produce results analysed here. ISTAT bears no responsibility for analysis or interpretation of the data.

1. Introduction

Starting in 1997, the Italian business income tax system has been subject to two major reforms after about thirty years where only minor changes to the regime initially designed at the beginning of the 1970s were implemented.

The first reform was introduced in 1997 by the previous government, while the second one was designed by the current government at the end of 2001 and came fully into effect in 2004. Although both reforms, often known respectively as ‘Visco’ and ‘Tremonti’ reforms after the name of the two Ministers who introduced them, state among their targets simplification of the business tax system and reduction of firms’ tax burden, the tax policy design underlying the two regimes is actually very different (Maurizi and Monacelli, 2003, Giannini, 2002).

Indeed, the ‘Visco’ reform stressed the need to pursue selective tax burden reductions aiming at narrowing the distortion in the tax treatment of equity finance as compared to debt, implicit in the previous system. In order to attain this purpose the main innovations of the ‘Visco’ regime was the introduction of the Dual Income Tax (DIT) allowance where a lower statutory rate is applied on that part of business profits representing the opportunity cost of new equity financing, compared to other forms of capital investment¹. This system therefore offers a structural reduction of the company tax burden depending on the amount of capital increases undertaken by the company, in the form of new subscriptions and retained earnings, as established by the tax code.

On the other hand, the policy design envisaged by the ‘Tremonti’ reform sets explicitly that tax instruments aimed at modifying firms’ financial decision tend to introduce distortions in firms’ behaviour and, therefore, should be eliminated. Consequently, the reform abolishes the DIT system and moves back to a uniform tax rate system. Moreover, as we will discuss in detail below, the ‘Tremonti’ system sets some changes to the definition of the corporate tax base by introducing a participation-exemption regime and by removing the full imputation of dividends, and brings in an optional consolidated tax statement for corporate groups, in this way attaining, in the government’s proposals, a simplification in the tax base computation.

In this paper we offer a preliminary assessment of the recent corporate tax reform by analysing its impact on the firms’ tax burden. For this purpose we develop a microsimulation model for the corporate sector and consider two policy scenarios. The base-case scenario analyses the structure of the dual rate system (DIT) existing just before the new government came into effect and when, as we will see, this system was practically abolished. The second scenario considers the reform passed by the current government.

¹ The DIT system is described in detail in section 4.

While during the last decades the increasing availability of micro-data and the development of longitudinal and cross-sectional microsimulation models has brought great progress in the analysis of the impact of public policy on households, empirical research on enterprises microsimulation models is still very limited². The model discussed in this paper can serve to fill this gap. The model is built as part of the DIECOFIS project of the European Commission³. As regards data issue, in order to have complete representation of enterprises tax dues it is necessary to move to a comprehensive information system of 'integrated and systematised' datasets on enterprises combining balance-sheets data with information on firms structure characteristics such as legal status, localisation, employed labour force, types and amount of investments, and so on. For this purpose, the microsimulation model is based upon an integrated dataset built at ISTAT (Italian National Statistical Office) within the DIECOFIS project combining survey data and published accounts data for corporations.

The paper is organised as follows. Section 2 describes the dataset used in the empirical analysis, while in section 3 we briefly discuss the methodology used to develop the microsimulation model. The main features of the corporate tax reform introduced in 1997 and those of the recent reform are, respectively, analysed in section 4 and section 5. Finally, in section 6 we present and discuss the simulation results. Section 7 then offers some concluding remarks. Appendix A describes in more detail the methodology developed in building the integrated dataset.

2. The dataset

The database used in the microsimulation analysis is the result of the integration of different data sources. The resulting information system is called *Enterprise Integrated and Systematized Information System* (EISIS) and serves a microsimulation model currently simulating the Corporation Income tax, social insurance contributions paid by the enterprises and IRAP, the so-called 'tax on productive activities'. Below we describe the data sources used to build the dataset, while the methodology developed in order to integrate the data sources is examined in appendix A of this paper.

² For a review see Saeed, Immervoll, Kattuman, Sutherland (2003).

³ Development of a system of Indicators on Economic COmpetitiveness and FIScal impact on enterprise performance (www.istat.it/diecofis), financed by the Information Society Technologies Programme (5th Framework Programme of the European Commission, IST-2000-31125). The project is coordinated by Paolo Roberti (scientific coordinator) and Maria Grazia Calza (both at ISTAT) and is carried out by a consortium including: ISTAT, the Board of Inland Revenue (UK), the Joint Research Centre of the European Commission (Applied Statistics Sector), Informer S.A., the London School of Economics, The University of Cambridge, Wirtschaftsuniversitaet (University of Economics and Business Administration, Division of Business Statistics), Wien, the University of Rome Tor Vergata, the University of Florence, the Centro di Ricerca Economica e Sociale (CERES).

The first step when integrating the different data sources is the selection of the ‘spine’ information that will be used as a basis for the integration process. This is represented by the statistical register of Italian active enterprises (ASIA)⁴. The other sources are statistical as well as administrative. As it concerns statistical surveys carried out by ISTAT we consider the following:

1. Structural Business Statistics;
 - Survey of Accounts System with 100 or more workers (*SCI*); this survey is exhaustive and therefore covers the universe of large enterprises;
 - Small and Medium Enterprise Survey with less than 100 workers (*PMI*); in this case only sample data are available;
2. Industrial Production Survey (*Prodcum*);
3. Foreign trade survey (*COE*);
4. other surveys such as the Community Innovation Survey (*CIS*) and the *ICT* Survey.

Data from the administrative sources that have been integrated in the *EISIS* database include:

1. Company Accounts (*CA*) data from the Chamber of Commerce annual report which complement ISTAT business surveys (*SCI* and *PMI*) for the corporate sector;
2. Fiscal data (*FISCAL*) from the Revenue Agency annual tax returns;

Table 1 displays, the coverage for the aforementioned data sources from 1996 to 2000.

Table 1 - Data Sources and number of units, years 1996-2000

<i>Sources</i>	1996	1997	1998	1999	2000
ASIA	3,870,474	3,770,130	4,049,174	4,132,093	4,222,657
SCI	29,711	27,163	8,454	8,734	9,281
PMI	54,187	65,720	47,484	45,947	53,690
PRODCOM	34,458			38,663	32,276
CIS	5,256				15,512
ICT					7,101
COE	284,879	262,751	300,407	307,056	
CA			483,351	480,238	489,516
FISCAL				11,875	39,229

Source: ISTAT

The ASIA archive files all active enterprises except those belonging to Agriculture, Forestry and Fishing (A, B sectors according to NACE classification), to the Public Sector (L) and other services (O91, P and Q). Table 2 shows, as of 2000, the reference population both for corporations and unincorporated enterprises, excluding firms of the Financial Service sector and of Agriculture, Forestry and Fishing.

⁴ The ASIA project started in 1995 with the purpose of improving and updating the register of Italian enterprises.

Table 2 - Business Register Asia, by business sector and legal type, year 2000

Business sector / Legal type	Unincorporated	Corporations	Total
Products from mining	2,069	2,067	4,136
Manufacturing	447,324	121,498	568,822
Electrical energy gas steam and water	432	1,761	2,193
Construction	445,667	75,482	521,149
Wholesale and retail trade services	1,210,299	134,175	1,344,474
Hotel and restaurant services	232,666	22,473	255,139
Transport storage and communication services	143,009	24,222	167,231
Real estate renting and business services	684,013	138,119	822,132
Other Services	424,950	35,824	460,774
Total	3,590,429	555,621	4,146,050
Percentage of firms	87%	13%	100%
Percentage of total employment	48%	52%	100%
Percentage of turnover	24%	76%	100%

Source: ISTAT

Corporate enterprises, which represent the population of reference of the Corporate Tax Model used in this paper, represent 13% of the total number of firms, employ more than 50% of total workers, produce 76% of total turnover.

Data also contain additional information on the firms groups structure. As we will discuss in the next sections this information proves to be of crucial importance to analyse the impact of the 2004 corporate tax reform. For the year 2000, in Italy, ISTAT estimates 48,331 groups (Garofalo, Morganti, 2000 and Cerroni, Morganti, 2003) taking into account 109,041 enterprises⁵. The business register includes 17,968 holding enterprises. The remaining number of holding companies which are not covered by the business register (30,363) are presumably foreign enterprises or are just outside the domain of the ASIA archive. Excluding firms of the financial sector and unincorporated firms, the number of enterprise included in groups comes to 98,475, of which 11,029 holdings and 87,446 subsidiaries, as shown in table 3.

⁵ Reconstruction of the groups structure provided by ISTAT uses other data sources, namely:

1. the Shareholders Database (BDS) from the Chambers of Commerce;
2. the Proprietorship Transparency Archive (ATP) from CONSOB (Italian Authority of the Stock Exchange market);
3. the Consolidated Balance Sheet data from the Chambers of Commerce.

The notion of 'control' is based on the concept of the 'nearest controller' reflecting the majority criterion (a controller is a legal unit having the 50% of the shares plus 1). This is the same definition established by the Italian legal code (art. 2359) and corresponds to the tax legislation definition after the 2004 reform. The algorithm developed at ISTAT (Cerroni, Morganti, 2003), for each group, permits to reconstruct 'chains of control' as well as to identify the enterprise with no controller that is the top of the group (holding enterprise).

Table 3 - Corporations participating in groups by business sector and type of participation; year 2000

Business sector / Type of participation	Holdings	Subsidiaries	Total
Products from mining	84	421	505
Manufacturing	2,845	21,947	24,792
Electrical energy gas steam and water	90	495	585
Construction	1,354	8,654	10,008
Wholesale and retail trade services	1,895	18,367	20,262
Hotel and restaurant services	273	2,746	3,019
Transport storage and communication services	521	3,538	4,059
Real estate renting and business services	3,489	27,247	30,736
Other Services	478	4,031	4,509
Total	11,029	87,446	98,475

Source: ISTAT

For the year 2000, the final overall dataset on which the microsimulation model is based contains 61,463 enterprises. Table 4 provides information about the number of firms considered in the dataset, by business sector and legal status.

Table 4 – Overall database of the microsimulation model

Business sector / Legal type	Unincorporated	Corporate	Total
Products from mining	260	231	491
Manufacturing	12,247	11,421	23,668
Electrical energy gas steam and water	190	319	509
Construction	2,119	1,004	3,123
Wholesale and retail trade services	8,201	3,954	12,155
Hotel and restaurant services	979	523	1,502
Transport storage and communication services	1,740	1,921	3,661
Real estate renting and business services	5,698	4,671	10,369
Other Services	3,833	2,152	5,985
Total	35,267	26,196	61,463

Source: ISTAT

Therefore, the corporate tax model comprises 26,196 corporations which are representative of about 556,000 Italian corporate enterprises. Regarding enterprises involved in groups, data enumerates roughly 10% of the population of reference, that is 1,776 holding companies and 7,575 subsidiaries. Table 5 displays the number of corporations present in the data, separately

for firms participating (holding companies and subsidiaries) or not participating in groups, by business sector.

Table 5 – Corporate enterprises participating in groups present in the overall database

Business sector / Type of participation	Not involved		Total
	in groups	Holdings	
Products from mining	170	13	231
Manufacturing	6,719	807	11,421
Electrical energy gas steam and water	188	23	319
Construction	626	125	1,004
Wholesale and retail trade services	2,680	255	3,954
Hotel and restaurant services	322	36	523
Transport storage and communication services	1,302	132	1,921
Real estate renting and business services	3,126	287	4,671
Other Services	1,712	98	2,152
Total	16,845	1,776	26,196

Source: ISTAT

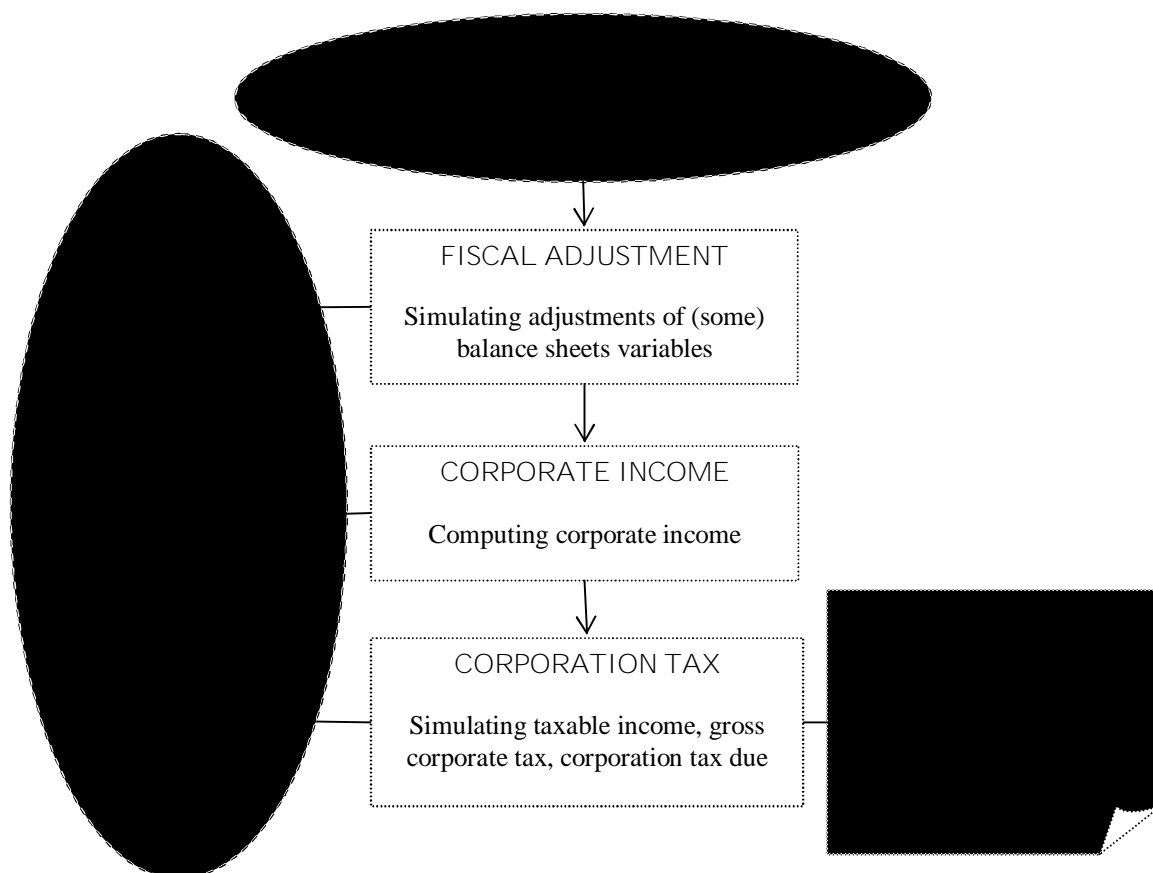
3. The microsimulation model

Figure 1 shows the basic structure of the microsimulation model. As already said, the Corporate Tax Model (CTM hereinafter) is part of an integrated model currently simulating also social insurance contributions paid by enterprises and IRAP, from 1998 to 2000⁶. At present, the model is static in the sense that it does not include firms' behavioural responses. Therefore, in the analysis we only consider the first round impact of the tax policy changes on firms.

The CTM is built following a modular structure and the order in which these sub-modules are implemented in the model obviously reflects the structure of the corporation income tax rules. The main building blocks of the CTM are the routines Fiscal Adjustment, Corporate Income, Corporate Tax which run sequentially. Each module uses other programs basically to simulate tax instruments used in the main routines and representing specific provisions allowed or provided by the tax legislation (DIT system, losses from the previous periods than can be carried forward, tax credits, tax reliefs and so on). These are described on the right-hand side of the chart, while parameters used in each module, which enter the model through external matrices, are represented on the left-hand side of the chart.

⁶ As regards social contributions and IRAP the microsimulation model covers the corporate as well as the unincorporated sector. For a description of the methodology used in building the integrated model as well as the possible interactions of the single modules see Bardazzi, Parisi, Paziienza (2004) and Bardazzi, Gastaldi, Nardo, Parisi, Paziienza (2004). The model is currently under development and in the near future it will also include modules simulating the other main indirect taxes on firms (excises and VAT).

Figure 1 - The basic structure of the microsimulation model



In Italy, the corporate tax base is obtained from the profit (loss) resulting from the company balance sheet adjusted for tax purposes. These (both positive and negative) adjustments reflect the reconstruction of corporate income for tax purposes. Usually, accounts data are not detailed enough to allow simulation of such fiscal adjustments and therefore to exactly estimate the corporate tax base. The methodology used in developing the CTM is based on simulating the (few) tax rules that define adjustments of the business income components that can be modelled according to the available information⁷, while fiscal adjustments of balance sheets variables that cannot be modelled are imputed using parameters computed on the basis of the corporate tax returns micro data available for a sample of firms⁸. The same procedure is used to impute other items, for instance provisions, deductions allowed by the tax law that cannot be modelled from the available data.

⁷ For instance, depreciation allowances.

⁸ In the year 2000 tax returns micro-data are available for 5279 corporations.

Besides simulating fiscal adjustments of profit/loss resulting from the balance sheet, in order the model estimates⁹: profits eligible to the DIT allowance, the dividend tax credit, fiscal losses from the previous periods brought forward, imputed on the basis of parameters computed from the tax returns micro data, the main tax reliefs provided by the Italian tax system (specifically for innovative investments, for research expenses, for job creation, the tax relief for small enterprises of the commerce and tourism sector). Final output of the module contains the main variables generated within the corporate tax module, that is taxable income, allowable DIT income, tax reliefs, gross tax, tax due. At intermediate levels, the model also generates variables reflecting eligible amounts of specific allowances that companies can bring forward to the next or the following years, in all cases where companies do not benefit for the full amount. This is the case of the fiscal loss of the year, income eligible to the reduced rate provided by the DIT system, tax reliefs.

In order to validate model output, table 6 displays the mean amounts and the percentage differences of taxable income, gross corporate tax, corporate tax due estimated by the model and, for the same firms, the amounts reported in the tax returns (see footnote 8).

Table 6 - Comparison between model estimates and tax returns data; mean amounts (euros) and percentage differences; year 2000

	Model output	Tax returns data	% differences
Taxable income	1,174,286	1,121,892	4.46
Gross corporate tax	425,294	404,906	4.79
Corporate tax due	383,671	368,913	3.85

Source: authors' estimates and computations from the 2000 corporate tax returns micro data

The model overestimates the corporate tax due by only 3,9 percentage points and this is consistent with overestimation of the tax base (4,5%). These results show that performance of the CTM in reproducing the corporate tax system can be considered very satisfactory.

⁹ Without going into further details, taxable income is obtained by adding the dividend tax credit to the 'adjusted' corporate income and by deducting losses from previous periods that can be brought forward up to five years. According to the imputation system, the dividend tax credit is first added to corporate income in order to get the total company tax liability and subsequently subtracted from the gross tax with the purpose of granting a relief for the tax paid by companies on distributed profits. As explained in detail in section 4, according to the Dual Income Tax (DIT) existing in 2000, taxable income is then split into two components, the first one subject to the ordinary tax rate (37%) and the second one subject to the reduced rate of 19%. The gross tax is computed after the DIT system. Finally, the corporate tax due is obtained by subtracting the tax reliefs and the dividend tax credit from the gross tax.

4. The Corporate Tax reform of 1997 and the DIT system: an outline

As already discussed in the introduction, the main innovation of the 1997 corporate tax reform was the introduction of the DIT allowance under the general purpose of reducing both the discrimination against equity finance and the effective tax rate¹⁰. In line with the Nordic DIT and the ACE systems, profits are divided into two components. The first represents the ordinary income or normal profits, that is the opportunity cost of new financing with equity capital, both in the form of new capital subscriptions and retained earnings, compared to other forms of capital investments. Ordinary income is calculated by applying an assigned nominal rate of capital return to the annual capital increases, both in the form of subscriptions and retained earnings, evaluated with reference to the value of capital stock at the date 31/09/96 (when the reform was actually presented), net of increase (again evaluated with respect to 1996) in loans to subsidiaries, loans to parent companies, or other investments held as fixed assets by the firm. The nominal rate, set yearly by the government, was 7% from 1997 up to 2001, when, as we will see below, the DIT system was practically abolished. Ordinary profits are taxed at the preferential rate of 19% while remaining profits, the second component of corporate income, are taxed at the main statutory rate. The statutory tax rate was 37% from 1997 to 2000, and was reduced to 36% in 2001. In order to limit revenue losses resulting from the introduction of the dual system the law fixed as 27% the average rate under which the effective corporate tax rate could not fall¹¹. This constraint was then removed in 2001. Furthermore, the law set out that the allowance could be brought forward for up to five years whenever allowable DIT income could not benefit from the reduced rate¹².

In the first years of application, presumably, the dual system benefited mainly new and less capitalised enterprises rather than highly capitalised companies (Bordignon, Giannini, Panteghini, 2001). Therefore, in order to increase the short-term impact of the reform and at the same time to speed up the transition to a regime where ordinary income is calculated on the entire capital stock rather than just capital increases (incremental regime), in 2000 some corrections to the original reform were introduced. Specifically, ordinary corporate income that

¹⁰ The Dual Income Tax systems introduced in some Northern European countries, as well as the Allowance for Corporate Equity (ACE) proposed by the Institute for Fiscal Studies at the beginning of the 1990s, were clearly taken into consideration when designing the 1997 tax reform, although the 'Italian' DIT differs from the other systems. On these aspects see Bordignon, Giannini, Panteghini (2001). It is important to note that as for the ACE system, the 'Italian' DIT applies both to the corporate and non-corporate sector.

¹¹ Formally the law set that allowable DIT income (ordinary profits) could not exceed 55.56% of total taxable income.

¹² When enterprises incurred in losses and when allowable DIT income (ordinary profits) exceeded total taxable income (or, before 2001, 55.56% of total taxable income).

could benefit from the preferential rate was increased (up to the enterprise net wealth threshold) by a conventional parameter set first to 20% (2000) and then to 40% (2001)¹³.

Formally, the total corporate tax amount (T_C) under the regime in force in 2001, before July, can be written as follows:

$$T_C = t (\Pi - 1,4 r \Delta K_{96}) + t' 1,4 r \Delta K_{96}$$

where Π represents total taxable profits, r is the imputed nominal rate which equals 7%, t the main statutory corporate tax rate (36% in 2001), t' the preferential tax rate (19%), and ΔK_{96} net capital increases evaluated with reference to 1996, as explained above. Therefore, under the DIT system, the 'effective' statutory rate ranges between t and t' , depending on the amount of profits eligible for the benefit (ΔK_{96}), increased by 40% in the regime existing in 2001.

In the years 1999 and 2000 corporations (as well as unincorporated firms) could also benefit from a temporary allowance known as the 'Visco' benefit (again after the name of the Minister who introduced it), working basically as an incentive scheme for investments. The relevant aspect of the benefit is that it could be cumulated with the DIT system, therefore strengthening its effects and its general purposes. Indeed, the share of profits corresponding to the amount of investments in new instrumental goods¹⁴ financed through company's own capital (new subscriptions or retained earnings) were taxed at the reduced rate of 19% rather than the statutory tax rate¹⁵.

5. The Corporate tax reform of 2004

At the end of 2001, the current government approved a Bill containing guidelines for a comprehensive tax reform affecting both direct and indirect taxation. Pursuant to Law April 7, 2003, no. 80 ('Enabling Law'), the Italian Parliament has then delegated the Italian government to implement a tax reform in compliance with the principles set out in the Enabling Law.

Regarding the corporation tax, now called IRES (*Imposta sul Reddito delle Società*), the main characteristics of the new system are¹⁶:

i) the abolition of the DIT system and the re-introduction of a uniform rate system with a rate of taxation of 33%;

¹³ While for unincorporated companies ordinary income was computed on the entire capital stock

¹⁴ There are some exemptions: means of transport (except those used for the firm's activity), real estate (except those for the enterprise's activity).

¹⁵ In this way, profits corresponding to the amount of new investments financed through new subscriptions or retained earnings are taxed at a lower rate in the same period when investments are undertaken, while ordinary income resulting from the same capital increase can benefit from a reduced rate than the statutory one in the following periods (DIT system). For corporations the 'Visco' allowance was extended to 2001.

¹⁶ Part of this section draws on Bardazzi, Parisi, Paziienza (2004).

- ii) the introduction of a participation-exemption regime;
- iii) the exemption of corporate dividends along with the abolition of the dividend tax credit;
- iv) the introduction of thin capitalisation rules;
- iv) the introduction of an optional consolidated tax statement for groups that can be extended also to foreign subsidiaries.

It is also important to note that another feature of the full reform is the abolition of IRAP. This is a regional tax on corporations and unincorporated firms based on firm's value added net of depreciation and amortizations, therefore with the exclusion of deductibility of interest costs and labour cost from the tax base. The statutory tax rate is 4,25% although since 2000 Regions can vary the rate within specific limits and rules. IRAP was introduced by the previous government in 1997 in substitution of other taxes¹⁷ and health insurance contributions, for the simplification task. Furthermore, this tax strengthens the effects of the DIT system in reducing tax discrimination between different financing sources. As IRAP represents the basic source of revenue for the Regions and the National health System, its abolition will necessarily be gradual.

The declared policy design underlying the 2004 tax reform is to increase simplification in the tax treatment of firms through standardisation of capital income taxation, the abolition of the dividend tax credit and group taxation. Concerning the neutrality issue, as already anticipated in the introduction of this paper, the idea behind the reform is that tax discrimination between different financing sources deeply rooted in the corporation tax must not be altered. Therefore, the combined system of incentive for share capital (provided by the DIT allowance) and taxation of interests (by IRAP) designed by the previous government to balance fiscal discrimination is consequently eliminated¹⁸.

As already said, the reform sets the abolition of the dual rate system and provides a uniform corporate tax rate of 33%. One of the most important innovation is the introduction of a consolidated tax regime for Italian corporate groups. Before the reform, Italy did not treat a group of companies as a single taxable entity. In the new regime, companies belonging to the same group can will be allowed to opt for a consolidated tax result allowing in this way to offset profits and losses among the members of the group. Consolidated tax statements can be applied also to non-resident subsidiaries, although in this case the consolidated tax statement must include all foreign subsidiaries¹⁹ and foreign subsidiaries' income can be attributed to the holding company only to the extent of the percentage of ownership, while in the domestic case there are no such restrictions.

¹⁷ Specifically ILOR and a the tax on firms' net assets.

¹⁸ In the government's view the abolition of IRAP also reflects the necessity to remove a tax which is peculiar in its nature as compared to the tax systems prevailing in most EU countries.

¹⁹ Option will last for at least three years in the case of domestic consolidation, five years in the regime for foreign subsidiary undertakings.

The second important innovation of the corporate tax reform is the introduction of a participation-exemption regime, where inter-corporate capital gains are exempted from taxation, and the exemption of dividends along with the abolition of the full imputation dividend tax relief. The general reason underlying these rules relate to avoiding double taxation of inter-corporate incomes (both capital gains as well as dividends) and, as it concerns dividend taxation, to international issues as the imputation system tends to favour domestic tax payers against non-resident ones (Giannini, 2003, Keen, 2002). Specifically, capital gains arising from the holding of an interest in a company (either resident or non-resident) are exempted from taxation provided that: (i) the stake in the company is recorded as a long term asset and has been owned for at least one year; (ii) the subsidiary carries out a commercial activity; (iii) the company whose interest is held is non-resident in a tax haven country. Symmetrically, capital losses are not deductible for tax purposes if the requirements hereinbefore specified occur. Dividends paid by the company (either resident or non-resident) to its shareholders, even in the case of liquidation, are excluded from the corporate tax base to the extent of 95% of their amount, while in the case of a consolidated fiscal unity a 100% exemption is granted²⁰.

In the pre-reform regime, Italy did not have any thin capitalisation regulations. According to the new system, a debt-equity ratio²¹ is introduced in order to prevent thin capitalisation of companies. When financial debts (such as loans, money deposits, etc.) granted or secured by the shareholders owning at least 10% of interest in the company and by related companies exceeds such threshold, interest costs are deemed as paid dividends and cannot be deducted from the tax base. Should the debt-equity ratio be disallowed, the company must give evidence that the exceeding amount of the financial debt is based on the company's (rather than on the shareholder's) credit capacity.

As the new system came into effect, in January 2004, the DIT system was completely abolished, while in the period from July 2001²² to January 2004, some corrections to the DIT mechanism were introduced in order to 'sterilise' this system. Specifically, in this period allowable DIT profits are based only on capital increases evaluated up to June 2001, while capital decreases undertaken after June 2001 must be taken into account; moreover, the nominal rate used when computing ordinary profits is reduced to 3% and the multiplier mechanism is abolished.

²⁰ Again, such exemptions do not apply if the distributing company is resident in a tax haven country.

²¹ The law sets a value of 4 for this ratio.

²² It is noteworthy that in the years 2001-2002 a new (temporary) investment incentive, the so-called 'Tremonti' incentive, was introduced in substitution of the former 'Visco' allowance. According to this measure investments financed either in the form of enterprises' own capital or through debt are partially exempted from taxation (specifically to the extent of 50% of the difference between the investment amount of the year and the average level of the last five years). The general purpose underlying this allowance was to lower the tax burden on enterprises when investments are undertaken, independently of the enterprises financing decisions. Again, the design underlying this allowance reflects the view that the tax system should not introduce distortions in the firms' behaviour regarding financing policy.

Finally, it is also important to note that in 2003 the statutory rate of taxation was reduced to from 36% to 34%.

6. Simulation results

In order to analyse the impact of the 2004 corporate tax reform on firms' tax burden, we consider two policy scenarios. The base-case scenario (2001) reproduces the corporate tax structure existing before July 2001²³, when the DIT system was practically abolished, while the second scenario (2004) considers the full corporate tax reform passed by the current government. Simulation of both scenarios are run on the 2000 dataset.

Specifically, in the 2001 scenario the structure of the DIT allowance corresponds to its last version before this system was 'frozen'. As compared to the system in force in 1998 when it was introduced, it is worth recalling that in this scenario the constraint that the average tax rate under the DIT system could not fall below 27% is removed and, more importantly, profits eligible to the reduced rate (19%) are increased by 40% of their amount²⁴. In the 2001 scenario the main statutory corporate tax rate is 36%.

As already explained in this paper, under the dual rate system the 'effective' corporate statutory rate ranges between the preferential rate (19%) and the statutory rate (36%), depending on the amount of profits eligible to the allowance. To estimate the effects of the DIT system on companies as of 2001 we first compute 'effective' statutory tax rates²⁵, which are shown in table 7 and table 8 as regards firm's activity sector and enterprise size²⁶.

²³ In the 2001 scenario we exclude the temporary 'Visco' investment allowance.

²⁴ Obviously, the idea behind these changes was, possibly, to extend the DIT system from the incremental regime, where allowable profits are computed on the basis of capital (retained earnings, subscriptions) increases, to a final regime where such profits are calculated on the basis of the entire company capital stock.

²⁵ These are defined as the ratio between the gross corporate tax and taxable profits.

²⁶ To fully estimate the effects of the DIT system, ideally, the 2001 scenario simulation should be run using data as of July 2001, before this system was 'frozen'. This is generally true for all simulations referring to tax legislation of different years where balance sheets of the same years should be used, and therefore also in the 2004 regime. The other possibility could be to update the main balance sheet variables, but this procedure would inevitably be imprecise and would present strong biases. Indeed, analyses are performed using balance sheets of year 2000 both in the base-case and in the reformed scenario. As regards the effects of the DIT system, therefore, we might expect the 'effective' statutory rates to be lower than the estimated ones due to greater capital increases undertaken by companies between January and July 2001.

Table 7 - 'Effective' statutory corporate tax rates in the base-case scenario. Breakdown by enterprise activity sector. Percentage values

Activity class	ETR
Mining and quarrying	29,74
Manufacturing	33,14
Electricity, gas and water supply	29,10
Construction	32,08
Wholesale and retail trade	32,31
Hotels and restaurants	31,05
Transport, storage and communication	32,53
Real estate, renting and business activities	32,82
Education	33,22
Health and social work	34,27
Other service activities	31,65
Mean	32,59

Source: authors' estimates

Because of the DIT allowance, in 2001 the mean 'effective' statutory tax rate is 32.6%, about 3.5 percentage points lower than the statutory rate (36%). In particular this system favours companies of the 'Mining and quarrying' sector (29.7%) and firms of the 'Electricity' sector (29.1%) which show rates below the 30%, while firms of the 'Health and education' sector exhibit a higher 'effective' rate (34.3%) than companies of the other sectors.

One interesting aspect of the analysis is that the DIT system favours (very) small firms, with less than 10 employees, as compared to medium and large sized companies (table 8).

Table 8 - 'Effective' statutory corporate tax rates in the base-case Scenario. Breakdown by classes of employees. Percentage values

Size	ETR
From 1 to 2	31.90
From 3 to 9	32.85
From 10 to 19	33.13
From 20 to 49	33.43
From 50 to 99	33.25
From 100 to 249	33.35
From 250 to 499	33.07
From 500 to 999	33.09
Above 999	33.19
Mean	32.59

Source: authors' estimates

In the reform scenario, 2004, we consider the effects of:

- i) the abolition of the DIT allowance and the introduction of a uniform tax rate system with a rate of 33%;

- ii) the exemption of capital gains on shares owned for at least one year and recorded as long term assets, and the symmetric non-deductibility of capital losses if the same requirements occur²⁷;
- iii) the introduction of thin capitalisation rules limiting the amount of paid interest that can be deducted;
- iv) the exemption of 95% of dividends and the abolition of the dividend tax relief;
- v) the introduction of the optional group taxation regime for domestic companies²⁸, in which case dividends from companies of the same group are completely exempted from taxation²⁹.

Table 9 presents the estimated ex-post implicit tax rates both in the base-case scenario and in the reformed scenario³⁰, along with the absolute differences, for activity sector of the firm. Implicit rates are computed as ratios between the corporate tax actually paid and operating surplus recorder in the 2000 balance sheet³¹.

The impact of the tax reform³² depends both on the modifications of the corporate tax base provided by the reform and on the introduction of the uniform statutory rate of 33% as compared to the ‘effective’ one prevailing in the 2001 scenario under the DIT system. As a total

²⁷ Information available in our dataset is not detailed enough to compute the amount of capital gains/losses potentially eligible to the exemption/non deductibility rule, as well as interest costs subject to the thin capitalisation rule (as described in point iii), from the aggregate variables amounts. Therefore, in the analysis we follow the same procedure developed in the Technical Report on the Tax Reform (Ministero dell’Economia e delle Finanze, 2003) presented to the Parliament by the government.

²⁸ Indeed, as data do not consider foreign subsidiaries companies, we can only simulate the impact of the consolidate tax statement for firms residing in Italy.

²⁹ When defining group taxable income the holding company can offset losses and profits of the participating companies, while losses from previous years that, as explained in section 2, can be carried forward, cannot be deducted from the group tax base. However, single firms can bring such losses forward and use them to offset future profits. Moreover, eligible amounts of tax reliefs that companies bring forward in all cases where they do not benefit for the full amount, can be used by the holding company to offset the group gross tax.

³⁰ The results refer both to single firms, which do not belong to groups, and to groups. Formally, the law sets that for firms opting for the consolidated tax statement the (aggregate) corporate tax is to be paid by the holding company. Therefore, for groups, the implicit rate is calculated as the ratio between the group tax and the group turn-over.

³¹ As well known, effective tax rates can be of two type, ex-post implicit tax rates (EPITRs which follow a *backward looking* approach) and ex-ante marginal tax rates (EAMTRs, which follow a *forward looking* approach). EPITRs usually relate taxes paid by the company to some aggregate item of the company balance sheet, such as gross profit, gross operating profit. EAMTRs have a different nature. They measure the theoretical tax burden on a hypothetical marginal investment (giving no extra-profits) that produces cash-flow chargeable to tax and therefore are computed to analyse how the tax system affects a marginal investment undertaken by the company, using alternative financial sources (debt, retained earnings). Methodology to derive EAMTRs owes its origin to King and Fullerton (1984) and was recently extended by Devereux and Griffith (1998) to infra-marginal investments. Being theoretical measures, *forward looking* tax indicators do not take into account elements of the tax system that can crucially alter effective company taxation. On the opposite, EPITRs are derived taking into account all elements of the tax system and therefore give a precise measure of the effective burden supported by the firm.

³² As a total effect, the simulated reform lowers the corporate tax base by about 3 percentage points, while total tax revenue decreases by 0.9 percentage points.

result, the mean implicit tax rate slightly increases from by 0.26 percentage points, from 18.01 to 18.27 (table 9).

Table 9 highlights some differences in the effective company tax burden due to specific characteristics of the enterprise (production function) and features of the corporate tax system (depreciation rates, allowances, tax reliefs). In the base-case scenario, while the mean implicit rate is 18%, the effective rate of taxation ranges from about 10% in the 'Other social and personal services' sector to about 20% for the 'Electricity' sector. The effects of the reform are not homogeneous across sectors, both in their magnitude and in their sign. Indeed, firms of the 'Education' and of the 'Health and social services' sectors exhibit a reduction in the implicit tax rate, while companies of the all remaining sectors show ex-post tax rate increases. Looking at the 'Manufacturing' industry we see that the reform pushes the implicit tax rate up by 1 percentage point. However, considering the two-digit classification of this sector, we note, again, that the impact of the reform is not homogeneous in its sign showing some sectors actually gaining from the new system (as for the 'Paper' and the 'Machinery and equipment' sectors), others bearing higher tax rates (as for the 'Chemical products').

Considering now the magnitude of the tax rate increases, we see that the highest rises occur in the 'Electricity' (2.9 points) and in the 'Mining' (0.8 points) sectors. This is somewhat an expected finding as companies of these sectors, because of the dual rate system, record the lowest 'effective' statutory rates in the base-case scenario³³.

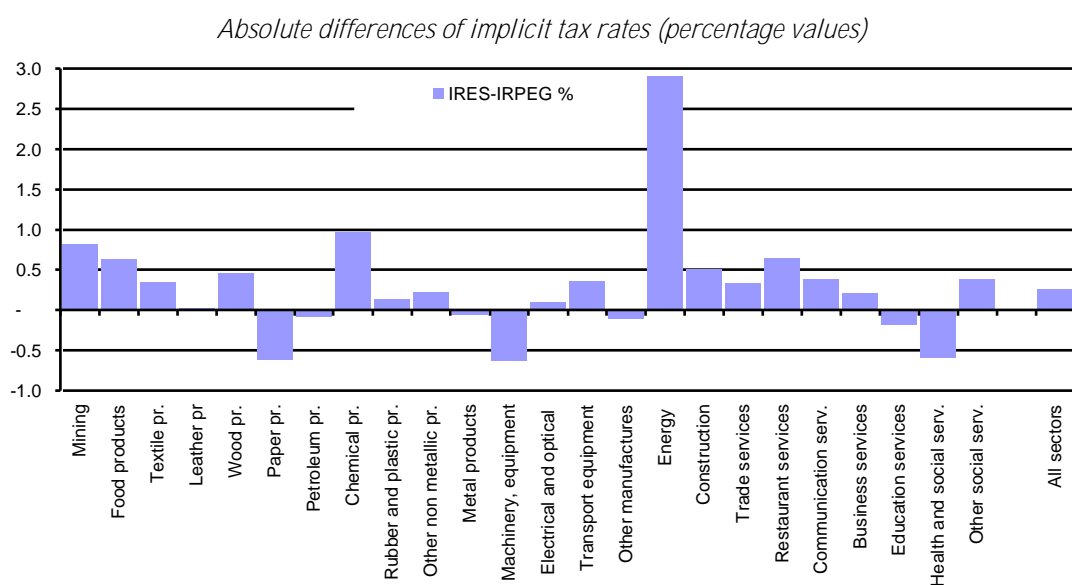
The greatest tax rate drop occurs in the 'Health and social work' services sector. This result can be explained, again, considering that under the modelled dual rate system companies of this sector do not seem to have benefited largely from this allowance, as in the base-case scenario they show the highest 'effective' statutory rate (34.3%)³⁴.

³³ It must be noted, however, that while in the 'Mining' industry the tax base is predicted to rise by almost 1 percentage points, in the 'Electricity' sector the tax base falls by 4 points partially offsetting the increase in the statutory rate of taxation (from 29% to 33%).

³⁴ While recording a tax base rise of 0,9% after the reform.

Table 9 – Ex-post implicit effective tax rates: base-case scenario and reformed scenario.
Breakdown by enterprise activity sector; percentage values

Activity sector	Base-case scenario	Reformed scenario	Absolute differences
Mining	13.69	14.50	0.81
<i>Manufacturing industry</i>	<i>19.36</i>	<i>19.37</i>	<i>1.00</i>
Food products	10.13	10.76	0.64
Textile products	19.80	20.15	0.35
Leather products	14.73	14.75	0.02
Products of wood	14.99	15.45	0.46
Paper products	24.64	24.02	-0.61
Petroleum products	16.39	16.31	-0.07
Chemical products	18.60	19.57	0.96
Rubber and plastic products	18.50	18.63	0.13
Other non metallic mineral products	18.99	19.21	0.22
Basic metals and fabricated metal products	18.51	18.46	-0.05
Machinery and equipment	24.48	23.85	-0.63
Electrical and optical equipment	20.57	20.67	0.10
Transport equipment	20.99	21.35	0.36
Other manufactured goods	15.78	15.68	-0.10
Electricity, energy, gas, steam and water	20.32	23.23	2.91
Construction	17.64	18.14	0.51
Wholesale and retail trade services	19.08	19.41	0.33
Hotel and restaurant services	11.44	12.09	0.65
Transport storage and communication services	17.62	18.01	0.39
Real estate renting and business services	18.73	18.93	0.20
Education services	17.18	17.01	-0.18
Health and social work services	14.15	13.55	-0.60
Other social and personal services	10.38	10.77	0.39
Mean	18.01	18.27	0.26



Source: authors' estimates

The dimensional effects of the corporate tax reform are shown in table 10.

Table 10 – Ex-post implicit effective tax rates: base-case scenario and reformed scenario. Breakdown by classes of employees; percentage values

Size	<i>Base-case scenario</i>	<i>Reformed scenario</i>	<i>Absolute differences</i>
From 1 to 2	16,64	17,06	0,42
From 3 to 9	17,75	17,83	0,08
From 10 to 19	19,67	19,75	0,09
From 20 to 49	22,03	22,58	0,56
From 50 to 99	23,22	23,18	-0,04
From 100 to 249	19,42	19,62	0,20
From 250 to 499	19,65	19,74	0,09
From 500 to 999	19,74	20,30	0,56
Above 999	22,43	23,30	0,87
Mean	18,01	18,27	0,26

Source: authors' estimates

In both scenarios implicit tax rates are variable across firm size³⁵ ranging from almost 17 points (firms with less than 3 workers) to 23 points (as in the case of firms with a number of workers between 50 and 99). An interesting result of the analysis is that firms benefiting from the reform are concentrated in class of companies employing more than 49 and less than 100 workers, which show a reduction in the implicit tax rate of 0,04 percentage points.

The magnitude of the increases in the effective rate of taxation are then different among firms of different size. The highest rise (0.86 points) is recorded for large firms, employing at least 1000 workers, although very small firms, employing less than 3 workers, experience a significant increase in the tax burden as well (0.42 points). For very small firms, again, the result can be partially explained considering that in the base-case scenario these firms show greater benefits from the DIT system (in terms of a lower 'effective' statutory rate) compared to firms of larger size, and therefore actually experience an increase in the statutory rate of taxation after the reform³⁶.

Table 11 provides the estimated changes in the ex-post implicit rate of taxation as regards the geographical breakdown.

³⁵ For firms opting to group taxation, the number of workers refer to the aggregate number of employees of the firms joining the consolidated tax statement.

³⁶ Although for these firms we note a substantial offsetting drop in the tax base of 12%.

Table 11 – Ex-post implicit effective tax rates: base-case scenario and reformed scenario. Breakdown by geographical area; percentage values

Area	<i>Base-case scenario</i>	<i>Reformed scenario</i>	<i>Absolute differences</i>
North West	19,73	20,03	0,30
North East	18,63	19,00	0,37
Centre	20,38	20,58	0,20
South	12,14	12,28	0,14
Mean	18.01	18.27	0.26

Source: authors' estimates

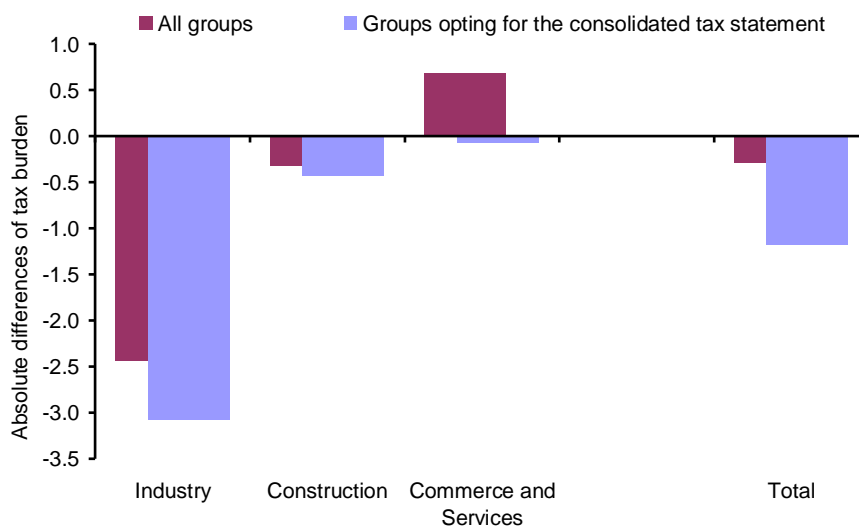
Companies residing in the South are less heavily taxed than firms of the other areas. One outcome of the analysis is that there are no differences among the four areas of the country regarding the sign of the implicit rate changes. Indeed, after the reform the effective company tax burden goes up in all areas of the country, although differences can be detected in the magnitude of such increases, with the North East recording the highest rise (0.37 points).

The results discussed so far consider the overall effects of the corporate tax reform. To go deeper into the analysis of the impact of the reform on companies belonging to groups³⁷, figure 2 depicts the absolute variations of the estimated ex-post implicit tax rates for groups and, separately, for groups opting to the consolidated tax statement, by sector of activity³⁸.

³⁷ When simulating the optional group tax regime, we assume that firms opt for the consolidated tax statement only in cases where group tax paid in the consolidated regime is lower than group tax computed in the non-consolidated case. Simulations show that out of 1776 holding companies (groups) of the dataset 276 would opt for the group regime, amounting to 1046 firms.

³⁸ As tax rates show in this case high variability across sectors as defined by the NACE classification, we consider the three main sector classification. The group sector of activity refers to that of the holding company.

Figure 2 – Effects of the 2004 corporation tax reform for firms belonging to groups: absolute variations of ex-post implicit tax rates; percentage values



Source: authors' estimates

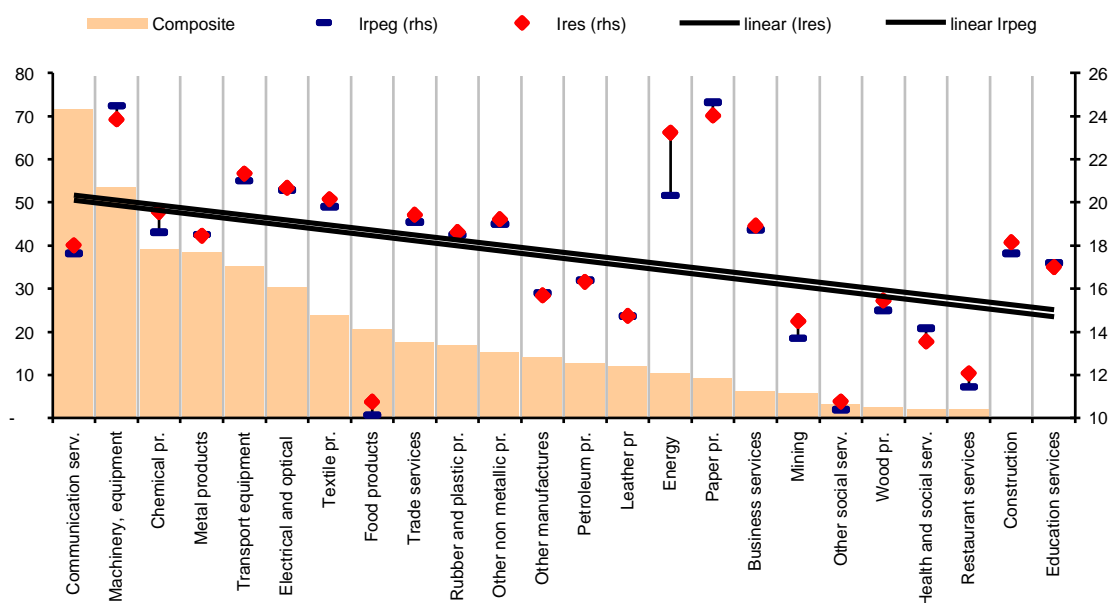
In spite of the general result which as examined above shows an increase in the mean ex-post implicit corporate tax rate, for firms belonging to groups we obtain an opposite result: the 2004 tax reform lowers the mean tax burden on firms belonging to groups by 0.29 percentage points and by 1.18 points for firms opting for the consolidated tax statement. Benefits of the group taxation regime are greater for groups of the 'Industry' sector (-3.08 points) and of the 'Construction' sector (-0.43 points) as compared to the 'Commerce and services' sector where, for firms opting for the consolidated tax statement, the ex-post implicit rate lowers only by 0.07 percentage points.

Finally, one important conclusion that we can draw from our empirical analysis is that the consolidated tax regime actually lowers firms' tax burden and this seems to offer a strong incentive to companies to change their strategies and organisational behaviour in order to take advantage of the new system.

Linking Economic Performance and Tax Burden

If we measure economic performance³⁹ of each business sector, we can obtain a ranking of composite performance and may associate it with the tax burden in the base scenario (Irpeg, marked with the dash symbol) and reformed scenario (Ires, marked with the rhomb symbol). The two lines represent the linear interpolations of the tax rates, in the two cases.

Figure 3 – Relationship among economic performance and tax burdens



In the chart we observe that the mean tax incidence is higher for “best performing” firms. Hence, it could be a positive relationship among performance and effective taxation and in the reformed scenario, this situation does not improve.

7. Concluding remarks

In this paper we have presented a microsimulation model for Italian corporations to perform tax policy analysis for the corporate sector. The model reproduces the corporation tax system from 1998 to 2000 and is part of an integrated microsimulation model simulating also social insurance contribution on enterprises and IRAP. As regards data, the model uses an integrated dataset which combines survey data on enterprises and company accounts for the years 1998-2000, built at ISTAT (Italian National Statistics Office). This integrated dataset allows for

³⁹ The Performance indicator is calculated by adding up three dimensions of the performance: (1) value added, (2) exports and (3) investments of the year 2000. Using the decomposition of the Gini index we have been able to consider the “between” component (that is, a weighted distance measure between one sector with the others with a lower mean value) and to add up the three dissimilarity amounts into one single (composite) measure of performance (it varies between 0 and 100) (cf. Oropallo 2004).

complete representation of the tax rules on Italian corporations and validation results show that performance of the model in reproducing the corporate tax system is very good.

We have run the model to analyse the impact of the corporation tax reform introduced in Italy in 2004 on firms' tax burden. The base-case scenario considers the structure of the corporate tax system existing just before the new government came into effect, where the 'last version' of the DIT system, as compared to the system introduced in 1997, is present. The reformed scenario considers the full reform passed by the government. The new corporation tax system moves back to a uniform tax rate (33%) as the DIT system is abolished, brings in some changes to the definition of the tax base by exempting corporate dividends and symmetrically removing the dividend tax relief, by exempting capital gains from long term assets owned for at least one year, by limiting deductibility of interest costs provided under thin capitalisation rules. The reform also introduces an optional consolidated tax statement for groups that can be extended to foreign subsidiaries. Simulations of both scenarios are performed on the 2000 dataset.

To analyse the impact of the reform, we estimate ex-post implicit tax rates computed as ratios between the simulated tax due and operating surplus. The total effect of the reform depends both on the 'effective' statutory tax rate prevailing in the base-case scenario due to the DIT mechanism, and on the modifications in the definition of the tax base provided by the new regime. The overall results show a slight increase of the mean tax burden (0.26 percentage points), although the effects of the reform are not homogeneous across sectors of activity both in their magnitude and in their sign, again due to the 'effective' statutory rate recorded under the DIT allowance and to the tax base changes for each sector.

Compared to the mean implicit rate increase, the analysis shows that as regards the dimensional effects greater tax burden increases occur for large sized firms (0.86 points), with at least 1000 workers, while concerning the geographical effects companies residing in the North East will bear the highest effective tax rate rise (0.37 points).

Finally, looking at the impact of the 2004 reform on corporate groups, the simulation analysis shows that the new system, as we actually might have expected, favours firms belonging to groups opting for the consolidated tax regime for which the average ex-post implicit tax rate drops by 1.18 percentage points. Therefore we conclude that the group tax regime offers a strong impulse to companies belonging to groups to change their strategic behaviour in order to take advantage of the consolidated regime.

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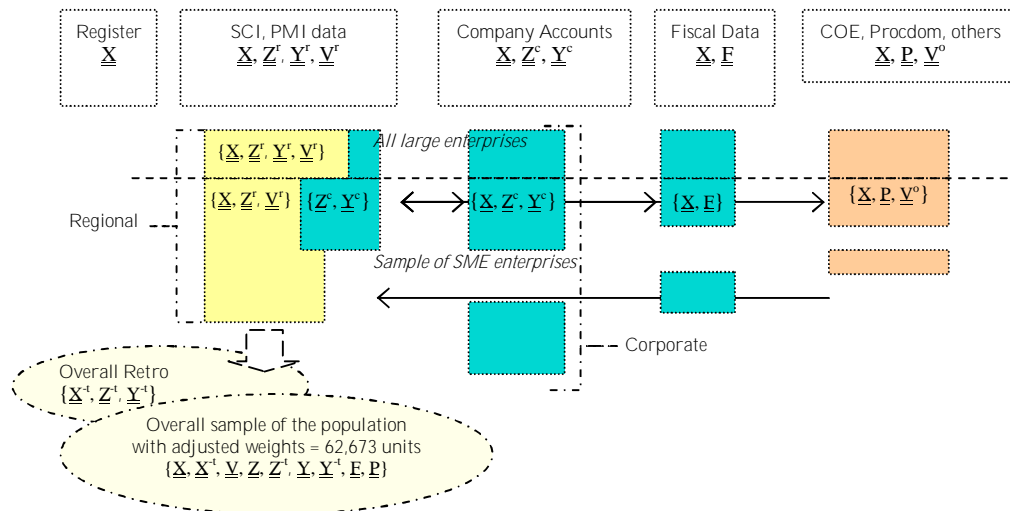
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Appendix A. Building the integrated dataset

The chart below illustrates the integration steps implemented in order to obtain the final dataset used in the microsimulation model (see also Oropallo 2004).

Chart – Integration scheme: sources, units and variables



Legend:

$\beta \hat{=}$ Exact matching

β Statistical matching

\underline{X} = Matrix register (4,146,050 units)

\underline{Z}^r = Matrix profit & loss of SCI and PMI surveys that are combined in the regional dataset (62,908 units)

\underline{Y}^r = Matrix assets & liabilities of SCI survey dataset (9,281 rows)

\underline{V}^r = Matrix employment and other variables (SCI and PMI surveys are combined in the regional dataset = 62,908 units)

\underline{Z}^c = Matrix profit & loss of corporate dataset (489,516 units)

\underline{Y}^c = Matrix assets & liabilities of corporate dataset (489,516 units)

\underline{E} = Matrix of various sections of enterprise tax returns (39, 229 units of which 5,279 corporate)

\underline{P} = Matrix of Procdom datasets (32,276 units)

\underline{V}^o = Matrix of other datasets

$\{\underline{X}^{-t}, \underline{Z}^{-t}, \underline{Y}^{-t}\}$ = Matrix with retrospective information (t= 1996, 1997, 1998, 1999)

As the chart shows, information from the administrative archives is appended to statistical information of the regional dataset (SCI and PMI). As when information from different sources is combined harmonization problems arise, a huge work in reconciling metadata information (record units, classifications, name and meaning of variables) is carried out.

In the cases where exact matching ($\beta \hat{=}$, in the chart) is not achieved, lack of information is solved using two statistical matching procedures (β , in the chart):

- 1) imputation through the nearest neighbour technique (specifically, we use the donor technique, based on a mixed distance⁴⁰);

⁴⁰ Briefly, on the basis of this procedure the donor unit is chosen among the similar units with complete data. Similarity is calculated by a distance function (cf. ISTAT 2002).

2) cell based imputation⁴¹.

After reconstructing the == variables which are not present in the surveys, a discrepancy variable is calculated. This procedure allows to highlight the units which are not coherent across the different sources and that must be deleted. At the end of the process, the sample weighs are recalculated in order to comply with the total population.

⁴¹ The cell is a specific domain of analysis and represents an aggregation of similar units.