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THE EFFECTS OF THE CORPORATE TAX REFORM ON FIRMS' TAX BURDEN

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Abstract

In this paper a microsimulation model for the business sector is presented. The model is based upon an integrated dataset built at ISTAT (Italian National Statistical Office) which combines ISTAT survey data on enterprises and published accounts data for corporations. In this paper the model is used to study the effects of the corporate tax reforms designed in recent years by the Italian government. To this purpose we estimate *ex-post implicit tax rates* and consider two policy scenarios: the first analyses the impact of changes to the DIT system introduced by the previous government in the period 1998-2001, while the second scenario analyses the effects of the project reform recently passed by the current government. As regards specifically the tax reform currently under discussion in Parliament, simulated results show that the mean implicit rate would be basically unchanged as compared to the rate prevailing in the first scenario, before the DIT system was practically abolished.

JEL classification: H25, H32

Keywords: microsimulation, corporate tax reform, effective tax rates

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1. Introduction

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. Usefulness of these techniques, and their need for policy analysis is best exemplified by their fast growing utilisation both by government agencies and international organisations. Indicators founded on microsimulation models have become a very powerful tool in many countries.

Yet progress in the analysis of the impact of public policy by means of micro data has been unbalanced as developments have mostly focused on households and very little on enterprises. At present, empirical research on enterprises microsimulation models is still very limited, though one would have expected this topic to be of no less importance than the former one. At the national level, experience in this field remains infrequent; and the availability of enterprise micro datasets, comparable to households', is still rare.

This paper presents a microsimulation model for the corporate sector that can serve to fill this gap. Access to high quality enterprise micro data information systems will prove crucial. This involves overcoming methodological and data issues. For the former, accounting consistency is a necessary step of enterprises microsimulation model and not a cursory procedure. Indeed, firms balance-sheets are constrained by accounting rules, thus simulation of tax rules requires to preserve both desegregated information and accounting consistency when some policy changes are implemented. As regards data issue, in order to have complete representation of enterprises tax dues it has become 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.

The microsimulation model presented in this paper is based upon an integrated dataset built at ISTAT (Italian National Statistical Office) which combines survey data and published accounts data for corporations. Data quality in terms of universe representation has proven to be very high.

The model has been built under the DIECOFIS (Development of a System of Indicators on Competitiveness and Fiscal Impact on Enterprise Performance) project[1], financed by

[1] The whole project 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), Denmark

the Information Society Technologies Programme (IST-2000-31125) of the European Commission and co-ordinated by ISTAT. The model reproduces the Italian corporation tax and provisions system (IRPEG, IRAP, social contributions) existing from 1998 onwards.

We run the model to estimate the impact of the corporation tax reforms recently designed by the Italian government on firms' tax burden. In particular, we analyse the impact of the reforms introduced in the period 1998-2001 by the previous government and the effects of the corporation tax reform project passed by the current government and at the moment under discussion in Parliament. The paper is organised as follows. Section 2 describes the data used in the model, while in section 3 the methodological aspect regarding the development of the Corporate Tax Model (hereinafter CTM) are analysed. The main innovations brought in by the corporation tax reform project are briefly discussed in paragraph 4. The policy scenarios and the results of the simulations are finally analysed, respectively, in section 5 and section 6. Paragraph 7 offers some concluding remarks.

2. Data description

The microsimulation model described in this paper is based on an integrated dataset which combines micro-data of the ISTAT SCI survey and accounts micro-data from the Chamber of Commerce.

The SCI (the Italian acronym is *Sistema dei Conti delle Imprese*) is a survey conducted yearly by ISTAT and is exhaustive for enterprises with more than 100 employees (for a more detailed description see Oropallo, Denk, 2003). The field of observation, including both the corporate and non-corporate sector, involves 8454 enterprises covering the following sectors of economic activity: mining, manufacturing, energy, construction, trade, hotels, communications, other services, education, health and other social services. The survey therefore excludes agriculture and fishing and financial services.

Table 1 displays for the year 1998 the total number of enterprises covered by the SCI survey used in the CTM, by legal status of the firm.

Statistik. The microsimulation model for Italian enterprises is built within Work Packages 5 and 6. The social contribution and IRAP modules were built within WP 5 by Rossella Bardazzi and Maria Grazia Pazienza. The Corporation Tax (IRPEG) module was built by Valentino Parisi within WP 6, with the contribution of Manuela Coromaldi and Mariangela Zoli.

Table 1 - Total number of firms liable to the corporation tax covered by the ISTAT SCI survey; year 1998

Legal status	*Number of enterprises*	*%*
Corporations	7124	86,04
Co-operatives	912	11,20
Public enterprises	71	0,86
Others	172	2,08
Total number of enterprises	8279	100,0

Source: ISTAT

The dataset refers to 8279 firms of which the majority are corporations (about 7100, 86% of the total) and co-operatives (912, 11% of the total). According to ISTAT estimates (Dank and Oropallo, 2003), while enterprises with more than 100 workers chargeable to the corporation tax represent only 2% of the total number of firms liable to the corporation tax, these firms 52% of the total workers, produce 52% of the total turn-over and 68% of the total profits.

The SCI survey reports the company balance sheet, detailed information regarding the employment structure of the firm and company purchases of both tangible and intangible assets, various other information regarding enterprise turn-over, credits, debts, specific expenses of the firm[2].

As we have already said the CTM is based on the ISTAT SCI survey data integrated with published accounts data of the same firms, available at ISTAT through the Italian Chamber of Commerce, which complement the business survey for corporate, co-operatives and consortium enterprises. This integration is necessary due to the fact that for tax modelling purposes in some cases variables in the accounts are defined at a more disaggregated level, and therefore it allows for a more accurate simulation of the tax rules. Moreover, in order to simulate specific tax instruments (for instance the DIT system, or the job creation tax relief) the model uses data from the same survey of previous years (specifically 1996 and 1997).

[2] A similar survey is conducted by ISTAT for small and medium sized enterprises (employing less than 100 workers), but this is not exhaustive. Moreover, in this case the survey reports only the economic statement of the firm and therefore it cannot be used for corporate tax modelling purposes. At the moment, within the DIECOFIS project, microdata of the survey on small and medium sized enterprises are being integrated with accounts data for the same firms available from the Chamber of Commerce. At that stage the microsimulation model will run on a dataset including both large firms and small and medium sized enterprises.

3. The model

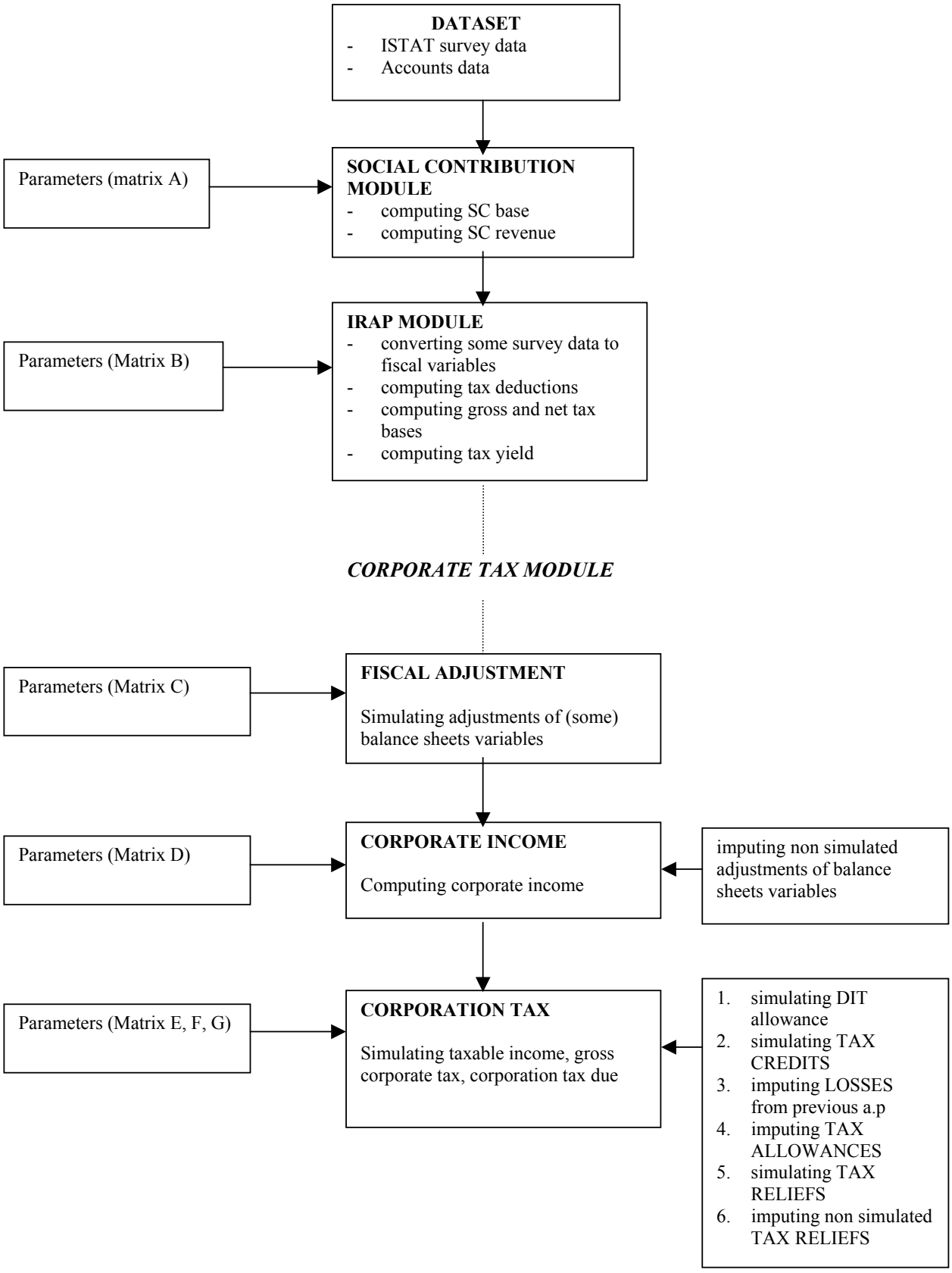
Figure 1 shows the basic structure of the integrated microsimulation model[3]. The model runs sequentially the Social Contribution module, the IRAP module and then the Corporate Tax Module (CTM)[4].

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 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, tax allowances, 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. Parameters used in each module enter the model through external matrices, represented on the left-hand side of the chart.

[3] For a description of the methodology used in building the integrated model as well as the possible interactions of the single modules (social insurance contributions on firms, IRAP, IRPEG), see Bardazzi, Parisi, Pazienza (2003). On the methodological aspects concerning the social contribution module and the IRAP module see also Bardazzi, Pazienza (2003) and Bardazzi, Gastaldi, Pazienza (2002).

[4] See footnote 1.

Figure 1 - The basic structure of the microsimulation model



The corporate tax base is obtained from the profit (loss) resulting from the company balance sheet adjusted for tax purposes. Usually, accounts data are not detailed enough to allow simulation of such fiscal adjustments and therefore to estimate the corporate tax base. The methodology used in developing the CTM is based on simulating the tax rules that define adjustments of the business income components (specifically: devaluation credits, depreciation of tangible and intangible assets, specific expenses for employees, maintenance work expenses, R&D expenses) that can be simulated according to the available information; fiscal adjustments of balance sheets variables that cannot be modelled are imputed using parameters computed on the basis of the aggregate corporate tax returns published by the Tax Authority (2002) for the fiscal year 1998. The same procedure is used to impute other items, for instance provisions, deductions, tax allowances, allowed by the tax law that cannot be modelled from the available data. Fiscal data are usually defined for activity sector or legal status of the company, and for specific income classes, that is corporate taxable income and some definition of the IRAP tax base. As some items are simulated before defining taxable profits, in order to improve the accuracy of imputation, non-simulated instruments (adjustments of company profits/loss for tax purposes, deductions, tax allowances) are imputed on the basis of parameters calculated by IRAP tax base classes, generated through the integrated model.

Besides simulating fiscal adjustments of some balance sheets variables, in order the model estimates: profits eligible to the DIT allowance, the dividend tax credit, fiscal losses from the previous accounting periods brought forward and tax allowances, both imputed on the basis of parameters computed from the aggregate corporate tax returns data, the innovative investment tax relief, the tax relief granted for research expenses, the job creation tax relief, the tax relief for small enterprises of the commerce and tourism sector; non-simulated tax reliefs, which we believe are of minor importance as compared to the aforementioned ones, are imputed again using parameters calculated on the basis of the corporation tax returns data. Final output of the module contains the main variables generated within the corporate tax module, that is taxable income, allowable DIT income, tax credits, tax allowances, gross tax, tax due[5]. 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.

[5] As regards validation of model output see Parisi, V. (2003).

4. The Corporation Tax reform

At the end of 2001, the Italian 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.

The new tax system will be structured around five types of taxes (individual income tax, corporate income tax, VAT, tax on services and excise duties). The main characteristics of the new system for firms are:

a) the abolition of the DIT system and IRAP; as regards IRAP, at a first stage, the cost of labour will be excluded from the tax base;

b) the generalised exemption of corporate dividends and distributed capital gains, the abolition of the dividend tax credit and other measures on the tax treatment of capital gains and losses;

c) the introduction of an optional consolidated tax statement for groups that can be extended to foreign subsidiaries.

Among the various declared objectives, simplification is attained trough standardisation of capital income taxation, the abolition of the dividend tax credit and group taxation. The IRAP abolition can be included in this goal if we recall the fact that the government has stressed the peculiar nature of IRAP and the idea that it does not simplify the tax burden on firms. Actually, although this tax was introduced by the previous government for the simplification task (indeed it substituted several other taxes and heath insurance contributions), it found a strong resistance by interest groups. Another important point is the neutrality view: although many items of the reform are designed to reach neutrality and rationalisation of tax provisions, the idea behind the reform is that tax discrimination between different financing sources deeply rooted in the corporation tax must not be altered. 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 eliminated. On the other side, the introduction of thin capitalisation rules will further this aspect.

As already said, the reform sets the abolition of the dual rate system and provides a uniform corporate tax rate of 33%[6]. One of the most important innovation is the

[6] The regime existing before the Government came into effect set a statutory corporate tax rate of 36% and a reduced rate of 19% on company ordinary income which represents the opportunity cost of new financing with equity capital (either in the form of new capital subscriptions and retained earnings) compared to other forms of capital investments. This component of business income is computed with reference to year 1996. When the reform project was passed (2001), the DIT system was "sterilised", that

introduction of a consolidated tax regime for Italian corporate groups. Under current legislation, Italy does not treat a group of companies as a single taxable entity[7]. In the new regime, companies belonging to the same group 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 financial statements must include all foreign subsidiaries[8] 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.

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[9]. 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 tend 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 exempt 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 a 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 granted[10].

Currently, Italy does not have any thin capitalisation regulations. According to the new system, a debt-equity ratio 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

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is the reduced rate system still applies to company capital net increases evaluated at June 2001. This system will then be completely abolished when the new tax law will come in force. It is also important to note that the statutory corporate tax rate was then reduced from 36% to 34% with the 2002 Budget.

[7] Italy is one of the few countries (along with Belgium and Greece) in EU not providing a group tax regime.

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

[9] These exemptions do not apply to unincorporated enterprises. In this case both dividends and capital gains must be partially included in the tax base.

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

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.

5. Policy scenarios

This section describes the policy scenarios considered in the empirical analysis. We consider two different scenarios, 2001 and 2004. The first basically considers the policy changes brought in by the previous government since 1998, before the new one came into effect (2001), while the second one considers the reform approved by the new government[11]. Finally, the effects of these reforms are discussed in section 6 where estimates of the ex-post implicit tax rates are presented.

5.1 The 2001 Scenario

In the 2001 scenario the structure of the DIT allowance corresponds to its last version before this system was practically abolished by the new government[12]. Specifically, in 2001, when computing profits allowable to the preferential rate the constraint that the average corporate tax rate could not fall under 27% is removed[13] and, more importantly, allowable profits are increased by 40% applying a multiplier (1,4) to their amount[14]. We also recall that in 2001 the statutory corporate tax rate is reduced from 37% to 36%.
Therefore, 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 firms in 2001 we first compute "effective" statutory tax rates for the activity sector of

[11] In the period 1999-2001, both the previous and the current Government introduced temporary tax rebates, known as Visco allowance and Tremonti allowance after the name of the two Ministers, under the general purpose of fostering investments and, at the same time, lowering the tax burden. Both these allowances are not in force at present and therefore are not taken into consideration in the simulations.
[12] We recall that at present the DIT is still in force, but capital increases eligible to the reduced rate are evaluated at June 2001 with respect to the year 1996, while capital decreases undertaken after June 2001 must be taken into account. Moreover, in 2001 the nominal rate used to compute ordinary income on this component of corporate profits was reduced to 5%.
[13] Basically, in tax computations, before 2001 the law set that the amount of profits eligible to the DIT allowance could not exceed a certain threshold, representing the constraint that the average corporate tax rate could not be lower than 27%. In such cases, however, eligible profits which did not benefit from the preferential rate could be brought forward.
[14] 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.

enterprise[15]. The model is then run on the original 1998 data, excluding the DIT system but using the estimated "effective" statutory tax rates[16] to simulate the corporate tax actually paid by companies in 2001. This regime represents the 2001 scenario where the DIT allowance is formally abolished, but the statutory rate reflects the "effective" rates existing in 2001 for activity sector of the enterprise.
Table 2 displays the "effective" statutory tax rates for firm's activity sector due to the DIT system in the 2001 scenario.

Table 2 - "Effective" statutory corporate tax rates in the 2001 Scenario. Breakdown by enterprise activity sector. Percentage values

Activity sector	Enterprises (%)	"Effective" statutory rates
Manufacturing, mining	57,7	32,9
Electricity, energy, gas, steam, water	1,2	26,6
Construction	3,5	32,8
Wholesale and retail trade services	8,5	33,5
Hotel and restaurant services	2,3	34,5
Transport, storage, communication services	7,7	28,9
Real estate, renting and business services	11,9	35,9
Education services	0,1	36,0
Health and social services	4,4	33,7
Other community, social and personal services	2,2	33,8
Mean	100,(	33,1

Source: author's estimates

[15]To fully estimate the effects of the DIT system, ideally, the 2001 scenario simulation should be run using data updated to the same year. This is generally true for all simulations referring to tax legislation of different years where balance sheets of the same years are to be used. The other possibility could be to update balance sheet variables. This procedure however would inevitably be imprecise and would present strong biases. Therefore, analyses are performed using 1998 balance sheets in all scenarios. However, the updating issue is particularly relevant regarding the DIT system given that using 1998 balance sheet variables would underestimate allowable DIT profits, while we expect the amount of allowable profits to be potentially higher due to greater capital increases undertaken by the companies up to the year 2001. Therefore, in computing the "effective" statutory rates we update all variables relevant to simulate the DIT allowance, as well as gross company profits, to year 2001. This procedure uses parameters computed from the *Centrale dei Bilanci* (2002) which reports company accounts for various years. It is also important to note that when simulating the DIT system in the 2001 scenario, we implicitly assume that capital increases are computed at the end of 2001, while, as we recall, the DIT system was "sterilised" in June 2001.
[16] These are defined as the ratio between the gross corporate tax and taxable profits.

The results show that, in the 2001 scenario, the estimated mean "effective" statutory corporate tax rate is 33,1%, about 3 percentage points lower than the statutory corporate rate of taxation set by the legislation. The DIT allowance favours in particular enterprises of the "electrical, energy, gas, steam, water" sector and of the "transport and communication sector", which exhibit "effective" statutory rates respectively about 6 and 4 percentage points lower than the mean rate. On the contrary (large) firms of the educational services sector seem not to benefit much from the dual rate system.

5.2 The 2004 scenario

As already discussed elsewhere in this paper, the current reform brings in some important changes to the corporation tax system. Besides the aforementioned abolition of the DIT allowance and IRAP, these changes basically regard the possibility for groups to opt for a consolidated regime, the reduction of the statutory rate from 36% to 33%, a different definition of the corporate tax base provided both by the introduction of a participation-exemption model and thin capitalisation rules, and the dividend exemption (to the extent of 95% of their amount, or for the total amount for groups opting for the consolidated regime), the abolition of the dividend tax credit. Information available in our dataset is not detailed enough to model all these changes to the corporate tax system. Therefore, while it is not possible to identify companies belonging to the same group, the incidence of capital gains/losses potentially eligible to the exemption/non deductibility rule, of interest costs potentially subject to the thin capitalisation rule, are computed using data provided by the Technical Report on the Tax Reform presented in Parliament[17].

Regarding the corporation tax we run the model to simulate the impact 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, in other corporations carrying out a commercial activity and not-residing in tax haven countries; the symmetric non-deductibility of capital losses if the same requirements occur; iii) the introduction of thin capitalisation rules

[17] Besides discussing the general effects of the reform and offering estimates of the tax revenue changes, the Technical Report (Relazione Tecnica, 2003) displays the total amount of capital gains, capital losses, interest costs, eligible to the exemption or subject to non-deductibility from the tax base, derived from the official Corporate Tax returns data for the year 1999. As these amounts refer also to firms with less than 100 employees, excluded from our simulations, we compute, for corporations, the incidence of such amounts on the aggregate values of capital gains, capital losses, interest costs resulting from the combined SME and LE surveys of the year 1999. These incidences are then applied to the relevant variables of our dataset.

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.

6. Simulation results

The choice of tax indicators is of crucial importance for tax policy analysis. Indeed, several tax indicators can be computed in general with different aims and therefore giving different information. The theoretical and empirical literature on this subject has become vast in the last decades. Effective tax rates are often computed in order to take into account both how the tax base is determined and the existence of specific tax allowances or deductions, features that are not captured by the statutory rates. Effective tax rates can be of two type, ex-post implicit effective tax rates (EPITRs, often described as *backward looking* tax rates) and ex-ante marginal effective tax rates (EAMTRs, often defined as *forward looking* tax rates). EPITRs usually relate taxes paid by the company to some aggregate item of the company balance sheet, such as gross profit, gross operating profit, and can be calculated either from aggregate or micro data. EAMTRs have a different nature. They measure the theoretical tax rates on a hypothetical marginal (giving no extra-profits) investment that produces cash-flow chargeable to tax. EAMTRs are therefore computed to analyse how the tax system affects a marginal investment (either in tangible or intangible assets) undertaken by the company, using alternative financial sources (debt, retained earnings). Thus, these indicators are useful to analyse how the tax system affects companies' investment decisions. Methodology to derive EMTRs is originally due to King and Fullerton (1984) and was recently extended by Devereux and Griffith (1998) to infra-marginal investments. In the latter case the literature usually refers to effective average marginal tax rates (EAVMTRs) which analyse the impact of the tax system on a hypothetical investment with different levels of profitability.

For their nature, being theoretical measures, *forward looking* summary indicators do not take into account elements of the tax system that can crucially alter effective company taxation. On the opposite, EPITRs, which are derived taking into account all elements of the tax system, give a precise measure of the effective burden supported by the firm.

In this section we analyse the impact of the reforms described above. Table 3 and table 4 display the ex-post implicit corporation tax rate (EPITRs), computed using turn-over as the ratio denominator, as regards both the sectoral and the size breakdown, in the base-line scenario and in the 2001 and 2004 (reform) scenarios.

Table 3 shows that the rates for the company's activity sector are not homogenous. Highly taxed firms are those of the sectors "hotels and restaurants", "transport and

communication", "real estate and business activities", "other services", which all exhibit greater rates than the average one. In the 2001 scenario, simulations show that modifications to the DIT system introduced in the 2001 scenario reduce the mean implicit corporation tax rate by 0,28 percentage points and that the corporate tax burden drops for enterprises of all sectors. Compared to the mean tax rate reduction (-0,28), greater falls of the implicit rates regard firm in the "electricity, gas, water supply" sector, "transport, communication" sector, "other social and personal services" sector.

As regards the modelled corporation tax reform the simulation show that the mean implicit corporate tax rate would be basically unchanged as compared to the mean rate estimated in the 2001 scenario (specifically, results show an increase of this rate by 0,01 percentage points). The estimates show also some interesting findings. The effects of the corporation tax reform in each sector, shortly, depend both on changes of the tax base and on the (uniform) statutory rate of taxation provided by the reform, as compared to the "effective" one prevailing in the 2001 scenario where a dual rate system is present. As a total result, firms of the sectors "real estate and business activities", "hotels and restaurant", "education", "other social and personal services" would gain from the reform, while companies of all other sectors would record a rise in the implicit tax rate. Among these sectors, companies of the "electricity, gas, water supply" and of the "transport and communication" sectors, experience the highest tax rates increase. This is somewhat an expected finding as, according to our simulations, these are the sectors where (large) firms have been most favoured by the DIT system[18].

[18] Indeed, as it was discussed in section 5, these sectors experience the lowest "effective" statutory rate in the 2001 scenario.

Table 3 - Ex-post implicit corporation tax rate for different scenarios: sectoral breakdown; percentage values

		Scenarios			Differences	
Sector of Activity	Number of enterprises (%)	Baseline 1998	2001	2004 (reform)	2001-1998	2004-2001
Manufacturing, mining	57,7	2,92	2,62	2,62	-0,30	0,00
Electricity, energy, gas, steam, water	1,2	1,59	1,16	1,47	-0,43	0,31
Construction	3,5	1,96	1,76	1,87	-0,20	0,11
Wholesale and retail trade services	8,5	1,74	1,59	1,62	-0,15	0,03
Hotel and restaurant services	2,3	2,95	2,77	2,70	-0,17	-0,08
Transport, storage, communication services	7,7	3,22	2,66	2,94	-0,56	0,29
Real estate, renting and business services	11,9	3,46	3,33	3,12	-0,13	-0,21
Education services	0,1	2,16	2,12	1,99	-0,05	-0,13
Health and social services	4,4	3,56	3,32	3,40	-0,24	0,08
Other community, social and personal services	2,2	4,35	4,00	3,95	-0,35	-0,05
Total	100,0	2,91	2,63	2,64	-0,28	0,01

Source: author's estimates

As for the size breakdown (table 4), in all scenarios companies with more than 500 employees display lower rates compared both to the mean value and to the values recorded for firms with less than 500 workers. The effects of the changes to the DIT system introduced in 2001 are widespread and approximately homogeneous across firms; as regards the modelled corporate tax reform, looking at the distribution of differences of implicit tax rates for classes of employees we observe that the rates actually increase for companies of all classes, except in the second and third class, that is for companies with more than 200 and less than 500 employees.

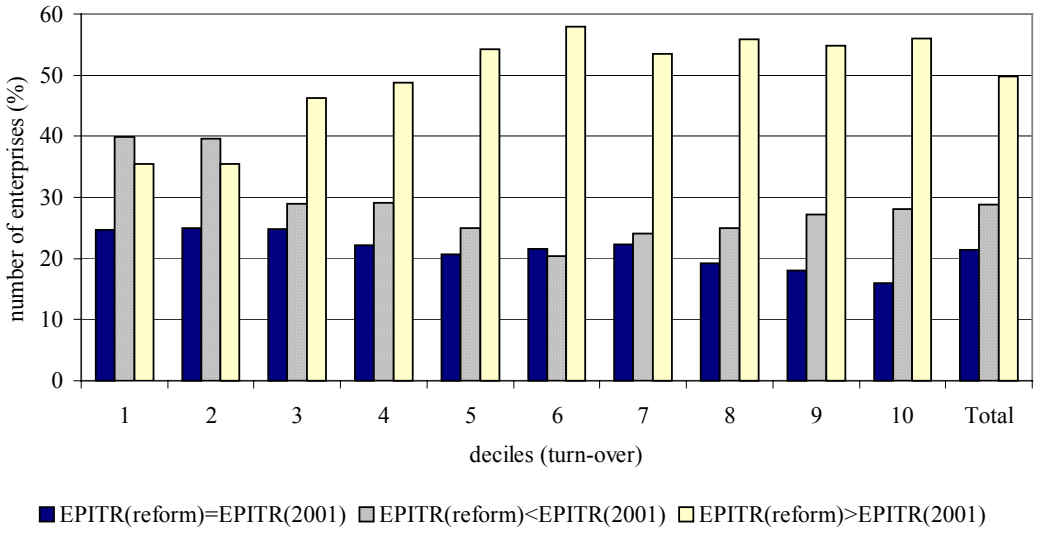
Table 4 - Ex-post implicit corporation tax rate for different scenarios: size breakdown; percentage values

		Scenarios			Differences	
Classes of employees	Number of enterprises (%)	Baseline 1998	2001	2004 (reform)	2001-1998	2004-2001
100-199	58,6	2,83	2,57	2,59	-0,27	0,03
200-249	10,8	3,12	2,83	2,79	-0,29	-0,03
250-499	18,8	3,23	2,91	2,88	-0,32	-0,03
500-1000	7,3	2,73	2,45	2,49	-0,27	0,03
Above 1000	4,5	2,45	2,19	2,21	-0,26	0,02
Total	100,0	2,91	2,63	2,64	-0,28	0,01

Source: author's estimates

To go deeper into the analysis of the effects of the corporation tax reform, figure 2 shows for each decile of turn-over the number of firms for which the ex-post implicit corporation tax rate in the reformed scenario is, respectively, equal, lower, greater as compared to rate recorded in the 2001 scenario.

Figure 2 - Percentage of firms for which the ex-post implicit corporation tax rate in the reformed scenario is equal, lower, greater than the rate in the 2001 scenario, by deciles of turn-over



Source: author's estimates

In total, 21% of the firms are "indifferent" between the two regimes (basically enterprises recording a negative taxable income in the base-line year for which the corporation tax is nil both in the 2001 and in the reformed scenario), 50% of the firms "loose" from the reform, while about 29% of the firms "gain" from the corporation tax reform. In the first two deciles the percentage of enterprises gaining from the reform is greater than the percentage of those loosing from the reform in terms of increased tax burden, while for all the other deciles the percentage of firms recording an increase in the corporate implicit tax rate exceeds the percentage of firms which show a reduced rate.

As explained in section 4, an important feature of the tax reform project is the abolition of IRAP. However, as IRAP still represents the basic financial source for the Regions and the National Health System, its abolition will be necessarily gradual. Article 8 of the Enabling Law provides that priority will be given to abolishing the non-deductibility of personnel costs and, as an example, suggests that 20% of the labour cost be deductible from the IRAP tax base[19].

In order to analyse the impact of the full reform, table 5 displays the overall (IRPEG and IRAP) ex-post implicit tax rates existing in the 2001 scenario and in the full reform scenario[20], along with the absolute differences of the tax rates estimated in the two scenarios, for enterprise's activity sector. In the full reform scenario, therefore, we simulate the impact of the corporation tax reform project discussed above and the 20% labour cost deduction from the IRAP tax base.

[19] The 2003 Budget introduced some changes with the general aim of reducing the share of labour cost on the total IRAP tax base. An empirical analysis of the effects of these changes is provided in Bardazzi, Parisi, Pazienza (2003).

[20] The estimates of the overall ex-post implicit tax rate are obtained by running the integrated model; therefore social insurance contributions and IRAP tax legislation are updated to 2001 in the first scenario, to 2003 (just before the 2004 Budget is passed, which is the year when we assume the full reform is introduced) in the second scenario. On these aspects see Bardazzi, Parisi, Pazienza (2003).

Table 5 - Overall (IRPEG and IRAP) EPITRs in the 2001 and in the full reform scenario (2004): sectoral breakdown; percentage values

		Scenarios		Absolute differences
Sector of Activity	Number of enterprises (%)	2001	2004 (full reform)	2004-2001
Manufacturing, mining	57,7	3,84	3,62	-0,21
Electricity, energy, gas, steam, water	1,2	2,36	2,43	0,07
Construction	3,5	3,19	3,00	-0,18
Wholesale and retail trade services	8,5	2,22	2,13	-0,09
Hotel and restaurant services	2,3	4,60	4,07	-0,53
Transport, storage, communication services	7,7	6,24	5,76	-0,49
Real estate, renting and business services	11,9	5,88	4,89	-0,99
Education services	0,1	4,47	2,82	-1,65
Health and social services	4,4	6,09	5,35	-0,74
Other community, social and personal services	2,2	5,71	5,26	-0,44
Total	100,0	4,24	3,89	-0,35

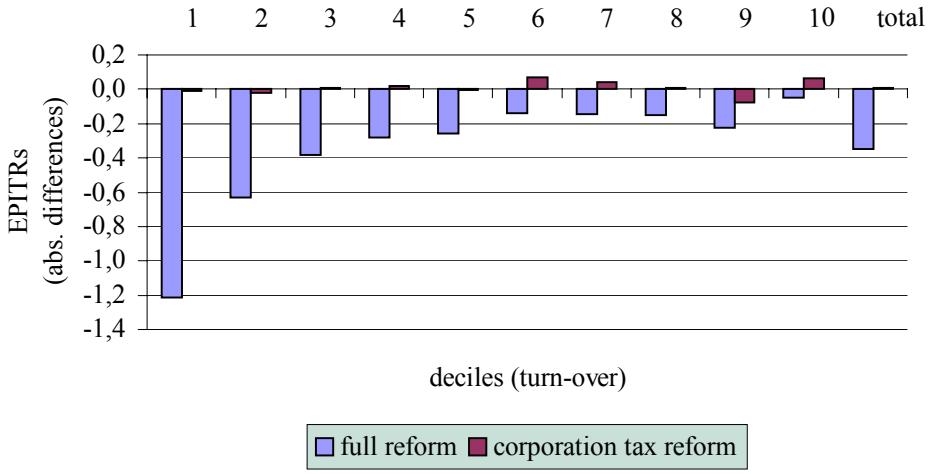
Source: Bardazzi R., Parisi V., Pazienza M.G. (2003)

As for the effects of the full reform[21], the overall mean ex-post implicit tax rate decreases by 0,35 percentage points. Simulation results show some interesting findings. Firstly, the reform causes the implicit rate to drop in all sectors except the "electricity, gas and water supply" sector which records an implicit tax rate increase of 0,07 per cent (mainly due to the reform of the corporation tax as we have already seen). This is a somewhat expected finding as, according to our simulations, this is the sector where (large) firms have been most favoured by the DIT system, as already largely discussed in this paper. We also call to mind that the same result applies to companies in the "transport and communication" sector, although in this instance it is the changes to IRAP that provide the reduction in the overall implicit rate. On the whole, drops in implicit rates are greater for companies in the commerce and in the services sector.

[21] These considerations are also drawn from Bardazzi, Parisi, Pazienza (2003).

Figure 3 displays the absolute differences of the overall and the corporation implicit tax rates, estimated for the 2001 and the 2004 scenario, for firms ordered by deciles of turn-over.

Figure 3 - Absolute differences (2001 and 2004 scenario) of overall (IRAP, IRPEG) EPITRs by deciles of turn-over



Source: author's estimates

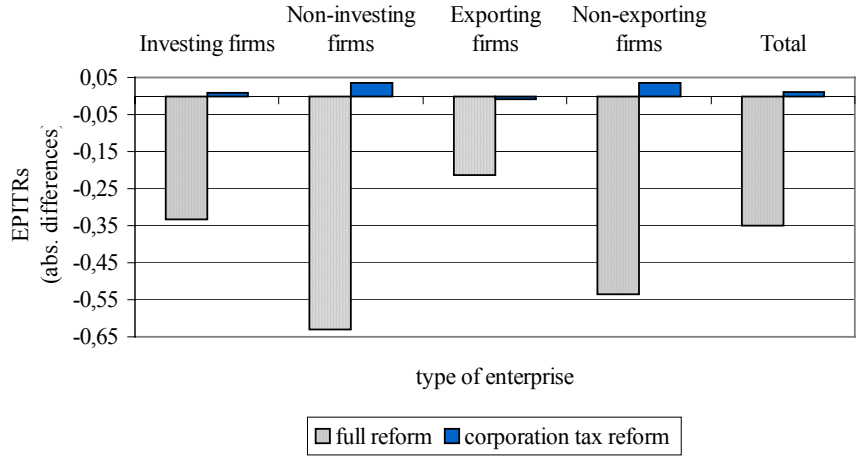
Again, the impact of corporation tax reform depends both on the modifications of the corporate tax base provided by the reform and on the introduction of the uniform statutory rate of 33% as compared to the "effective" statutory rate estimated in the 2001 scenario. Simulation shows that the effects of the corporation tax reform are not homogeneous across deciles; indeed, implicit corporate tax rate slightly decrease for firms of the I, II, IX decile, while it slightly increases for companies of the remaining deciles.

The full reform would reduce the company tax burden for firms of all deciles. The benefits of the full reform tend to be higher for firms of the lower deciles (first three deciles). This result is discussed in more detail below. Here we note that in the first decile the estimated reduction of implicit tax rate would be significant, about 3 times (-1,2 points) the mean value (-0,35).

In order to get a precise picture of the type of companies that would mostly benefit from the reform, we estimate EPITRs for groups formed by investing and non-investing firms

and for exporting and non-exporting companies[22]. Figures 4 displays the absolute differences of both overall implicit tax rates and of the corporation implicit tax rates for investing and exporting companies, estimated for the 2001 and the 2004 scenario.

Figure 4 - Absolute differences (2001 and 2004 scenario) of overall and corporation implicit tax rates for investing and exporting firms



Source: author's estimates

While increases of the implicit corporate tax rate tend to be a little higher for non-investing and non-exporting firms, in the full reform scenario non-investing and non-exporting companies seem to benefit from the reform in terms of lower tax burden as compared to the other firms (investing, exporting).

This finding can be explained considering that the benefit deriving from the 20% abatement of the labour cost from the IRAP tax base tend to favour enterprises with a higher incidence of the labour cost over turn-over. Figure 5 gives evidence that, as for the data used in this paper, this incidence is higher for non-investing and non-exporting firms, as compared to the other enterprises, and that it decreases for companies of upper deciles of turn-over, which explains the fact that the benefits of the modelled full tax reform are greater for companies of the lower deciles of turn-over, as we discussed above.

[22] Investments are represented by purchases of both tangible and intangible fixed assets. Investing companies are 94,9% (5,1% non-investing) of the total, exporting firms 58,4% of the total (41,6% non-exporting).

Figure 5 - Incidence of labour cost over turn-over by deciles of turn-over and by type of firms (investing, exporting); percentage values

Source: author's estimates

6. Concluding remarks

This paper presents a microsimulation model for the Italian enterprises to perform tax policy analysis for the business sector. Although in the past decades microsimulation models for the household sector have become a widely used tool for analysis of the redistributive impact of public policy, empirical research on microsimulation models for enterprises is still very limited.

The model discussed here reproduces the corporation tax system (IRPEG) but it is part of an integrated microsimulation model simulating also social insurance contribution on enterprises and IRAP. As regards data, for tax modelling purposes it is necessary to move from single survey data, or single accounts data, to a comprehensive system of "integrated and systematised" datasets on enterprises. To this purposes the model uses a specific integrated dataset which combines survey data on large enterprises (with more than 100 workers) and company accounts of the same firm for the year 1998, built at ISTAT (Italian National Statistics Office) within the DIECOFIS project. This integrated dataset allows for a complete representation of the tax rules on Italian corporations and validation results show that performance of the integrated model in reproducing the tax system on corporations is good (Bardazzi, Parisi, Pazienza, 2003).

In this paper we run the model to analyse the impact of the corporation tax reform introduced in the period 1998-2001 by the previous government, as well as the effects of the reform approved by the current government with the Enabling Law no. 80 (April 7, 2003) on firms' tax burden.

The base-line year of the model is 1998. In the empirical analysis we consider two scenarios. The first, 2001, considers the structure of the corporate tax system existing just before the new government came into effect including the reduction of the statutory rate from 37% to 36% and the changes to the DIT system introduced in the same year; for the latter, profits eligible to the preferential rate (19%) are increased by a multiplier (1,4) and the constraint that the average corporate tax rate could not fall below 27% is removed. Simulations show that DIT changes lowers the "effective" statutory corporate tax rate from 36% to 33,1% because of the dual rate system.

The second scenario, 2004, considers the reform project approved by the current 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.

In order to analyse the impact of the two waves of reforms, we estimate ex-post implicit tax rates. Results show that the reforms introduced in the period 1998-2001 reduced the implicit corporate tax rate from 2,91% (1998) to 2,63% (2004), therefore by 0,28, while the tax reform project passed by the current government, which exclude the effects of the group tax regime that cannot be modelled on the basis of available data, show basically an unchanged mean corporate tax rate (2,64%) as compared to the one prevailing in the 2001 scenario (2,63%). Firms operating in sectors which benefited most from the DIT allowance are those that will bear most of the reform cost in terms of a higher implicit rate ("electricity, gas and water supply", "transport and communication services"). It is important to stress, however, that taking into account the effects of the optional group tax regime, which we recall cannot be simulated on the basis of the available data, could change the impact of the reform for companies belonging to groups.

The project reform sets also the gradual abolition of IRAP. The reform introduces a deduction of 20% of labour costs from the IRAP tax base as a first step towards the (future) abolition of this tax. To go deeper into the analysis of the effects of the full reform, we estimate the overall (IRPEG, IRAP) ex-post implicit tax rates. Results of the

simulation show that in this case the full reform would obviously lower the company tax burden, specifically from 4,24% (2001) to 3,89% (2004), therefore by 0,35 points. As for the effects of the full reform the empirical analysis shows that greater falls of the ex-post implicit overall tax rate, as compared to mean reduction, would occur for (large) enterprises of the commerce and services sectors and for companies of lower deciles of turn-over.

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