A Regional General Equilibrium Model for Tax Policy Evaluation

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ABSTRACT

This paper presents two versions of an applied general equilibrium model for a regional economy of Andalusia, Spain, that differ in the degree of substitutability in primary factors. We intend to exemplify the use of a model with these characteristics to analyze the impact that the reform of the personal income tax (Act 40/98) implemented in Spain as a whole would have had on the Andalusian region in particular. Such an important tax reform is bound to affect the behavior of the agents in this economy, both in the microeconomic and the derived macroeconomic spheres. The general character of the tax reform under analysis and the relations among the different economic agents advise us to use models with these characteristics to study the effects of this reform. The models is of the neoclassical variety and includes not only the productive sectors of the economy but also the foreign sector and the government, which are usually absent from theoretical general equilibrium models. Both versions of the model are calibrated by using a Social Accounting Matrix of Andalusia for 1995.

Keywords: applied general equilibrium models, social accounting matrix, fiscal policy, economic influence, regional economy.

JEL: C670, D570, R150.

1. Introduction.

The reform of direct taxation in Spain, exemplified by the personal income tax, which was implemented in the fiscal year 1999, was bound to affect the patterns of behavior of economic agents, particularly of consumers, since it modified their choice sets. Due to the fact that this reform did not affect the tax rates of all consumers uniformly, its effects should be studied in a context which allowed us to capture the adjustments all consumers had to make to their new budget situation, and their effects on the economy as a whole by means of the adjustment mechanisms which make an economic equilibrium possible.

Several studies based on micro-simulations have been carried out to assess and quantify the effects of fiscal reforms at a regional level, such as Lasheras et al. (1994), Castañer et al. (1998), and De las Heras et al. (2001). These studies, though, searched mainly for welfare indicators and/or income inequality indexes, thus ignoring the overall economic impact that a fiscal reform or any other alteration of the tax legislation has on the major macromagnitudes of the regional economy under analysis, with regard to direct taxation.

These limitation, however, can be overcome by using one of the most suitable tool for the study of the effects of a wide-range fiscal reform, namely, applied general equilibrium models. In the last twenty-five years, these models have been profusely used to analyze government economic policies, both in developed and developing countries (Shoven & Whalley (1992)). An analysis based on applied general equilibrium models permits to capture the changes in the spheres of production and consumption, as well as in income distribution, as a response to changes in a given

economic policy, since these models explicitly include the framework of interdependence of all markets in an economy.

It is our aim here to evaluate the possible effects of the tax reform in a subset of the Spanish economy, namely, the Andalusian region. In order to achieve this objective, we present an empirical model of the regional economy developed in accordance with the methodology of applied general equilibrium analysis, and numerically implemented by using a SAM database of the region for the year 1995 (SAMAND95), constructed by Cardenete (2000).

This paper is organized as follows. In the next section, we present the main characteristics of our model and its two versions. Then, we comment on the basic features of some of the simulations we have carried out, and we include the tables summarizing the main results obtained. Finally, we draw the main conclusions and at the same time we set forth the limitations of the analysis, as well as the research lines which should be explored for its improvement.

2. The model.

As it is well known, an applied general equilibrium model must includes three basic elements: first, the formulation of a theoretical model of the economy; second, the specification of the parameters of the functions that will form part of the model; and third, the use of an algorithm that computes the various alternative equilibrium states in different scenarios.

2.1. Characteristics of the model.

The nature of the economic situation that is to be studied should suggest the key elements that have to be used in the design of the model. A general requirement is that the model should capture the basics of the economic reality under discussion while at the same time not being so structurally detailed as to make the analysis impossible or very difficult. A specific requirement is that, since we intend to assess a reform of direct taxation, it is essential that the model is detailed as regards household economies, with a minimum disaggregation of consumers according to, for example, their income levels.

Basically, our model includes a disaggregation of 25 production sectors and 4 representative consumers. The government is also an economic agent whose functions are to impose taxes on transactions among the rest of agents, to supply public goods, to transfer income to the private sector, and to demand goods and services from the private sector. The foreign sector is a simplified agent that includes three trading regions (Rest of Spain, European Union and Rest of the World). Finally, although the model is static, it includes a savings and investment sector which enables us to close the flows of income and to account for an activity (savings from the point of view of agents as consumers, and investment from the point of view of final demand) that cannot be separated from the flows of income the model intends to capture.

It is also worth noticing that in both models the relative prices, the level of activity of the production sectors, and the public and foreign deficits are endogenous variables. The equilibrium of the economy will determine the values of these variables.

In the next section, we will specify how the agents take their decisions and we will explain the concept of equilibrium in further detail.

2.2. Producers.

The production sphere of the economy is represented by 25 production sectors, whose objective is to maximize after-tax profits, subject to specific technological constraints. Each productive sector produces a homogeneous good using a constant returns to scale technology. This means that there will be no excess profits. Under these conditions, the key elements for a description of the behavior of production sectors are conditional input demand functions.

The inputs to the production function are two: domestic production Xd_j, and imports $Xrow_j$, using a fixed-coefficients technology (Leontief). Domestic output is obtained as a combination in fixed proportions of intermediate inputs and a composite primary factor, *value added* (VA_j). Value-added is produced by combining the primary factors, labor and capital, using, alternately, two types of production technologies, one with fixed coefficients or Leontief, and another with factors substitution or Cobb-Douglas.

In particular, total production Q_j of sector j is an aggregation of the two types of production (domestic and foreign), which can be written as

$$Q_j = min(Xd_j, Xrow_j) \qquad j = 1,2,...,25. \qquad (1)$$

In turn domestic production Xd_j is produced by means of a fixed coefficients technology:

$$Xd_j = min(X_{1j} / a_{1j}, X_{2j} / a_{2j}, ..., X_{25j} / a_{25j}, VA_j / v_j) \qquad (2)$$

where X_{ij} represents the quantity of good *i* necessary for the domestic production of good *j*; the technical coefficient a_{ij} measures the minimum quantity of this factor necessary to produce one unit of good *j*; VA_j represents the value added by sector *j*; and the technical coefficient v_j represents the minimum quantity of value added necessary to produce one unit of good *j*.

$$Xd_j = min(X_{1j} / a_{1j}, X_{2j} / a_{2j}, ..., X_{25j} / a_{25j}, VA_j / v_j) \qquad (2)$$

Regarding value added, we must define this concept in further detail, since it allows us to obtain two versions of the model (with and without factors substitution). The combination of primary factors, labor and capital, adopts two formats: a Leontief technology **(3a)** and a Cobb-Douglas technology **(3b)**:

$$VA_j = min(L_j, l_j, K_j, k_j) \qquad j = 1,2,...,25. \qquad (3a)$$

$$VA_j = \mu_j L_j^{\gamma_j} K_j^{(1-\gamma_j)} \qquad j = 1,2,...,25. \qquad (3b)$$

where L_j and K_j are the total quantities of each factor; l_j and k_j are the technical coefficients of the Leontief technology; and μ_j and γ_j are, respectively, the scale parameters and the participation coefficients of the Cobb-Douglas technology.

2.3. Consumers.

The model includes four different types of consumers who are classified according to their source of income. Each consumer's income *h=1,..4* is the result of the

sale of the endowments of productive factors, namely, labor L_h and capital K_h, from which they receive a salary w and a capital remuneration r. Every consumer also receives transfers from the public sector TPS_h (pensions, social benefits, unemployment benefits,…) and transfers from the rest of the world $TROW_h$. All this gross income is netted out by the social contributions directly paid by workers WC_h and by the effective direct taxation on income DT_h. Thus, disposable income for each consumer can be written as follows:

$$YDISP_h = Gross\ Income - Total\ Direct\ Taxes$$

$$\begin{aligned} YDISP_h = {} & w L_h + r K_h + cpi\ TPS_h + TROW_h - DT_h (r K_h + cpi\ TPS_h + TROW_h) \\ & - DT_h (w L_h - WC_h\ w L_h) - WC_h\ w L_h \end{aligned} \qquad (4)$$

where *cpi* is a consumer price index which updates transfers in the public sector according to the changes in prices in general. Notice that tax depreciation distinguishes between taxable and non-taxable earned income, since social contributions by consumers are not subject to the personal income tax with current legislation.

Consumers' preferences are described by a Cobb-Douglas utility function, defined for consumption goods CD_{jh} and savings SD_h. Consumers maximize the utility of both goods subject to disposable income $YDISP_h$, which determines their budget constraint.

$$\begin{aligned} &maximize && U_h(CD_{jh}, SD_h) = \left(\prod_{j=1}^{25} CD_{jh}^{\alpha_{jh}}\right) SD_h^{\beta_h} \\ &s.t. && p_j CD_{jh} + invp\ SD_h = YDISP_h \end{aligned} \qquad (5)$$

where α_{jh} y β_h represent the participation coefficients corresponding to consumption goods and savings, respectively.

2.4. Public sector.

The public sector demands goods and services, collects taxes, and supplies transfers to consumers. In our model, the level of activity of the government remains constant, although the value of the public expenditure may vary as a result of changes in prices, and the deficit is endogenously determined. In order to define this macroeconomic closing formula, we must define, first, government income.

Government income accruing from taxes on production, $R_{P,}$ are

$$R_P = \sum_{j=1}^{25} \tau_j \left(\sum_{i=1}^{n} a_{ij} p_i Xd_j + ((1 + EC_j) wl_j + rk_j) VA_j \right) \qquad (6)$$

where R_P represents revenues accruing from indirect taxes on *production*, and τ_j is the tax rate on production, and EC_j is the social security contribution by employers.

The government collects production taxes from the use of labor by firms. These taxes are obtained from two sources: taxes on the firms and taxes on the workers. Regarding the former, total revenue accruing from this tax on firms R_{LF} , is

$$R_{LF} = \sum_{j=!}^{25} EC_j wl_j VA_j \qquad (7)$$

Regarding workers, R_{LC} represents labor tax revenue or social security rate:

$$R_{LC} = \sum_{h=1}^{4} WC_h wL_h \qquad (8)$$

Imports are also taxed with tariff rates t_j, which tax all transactions with the foreign sector. Thus, total tariff revenues, $R_{T,}$ are

$$R_T = \sum_{j=1}^{25} t_j \, rowp \, a_{rwj} \mathrm{Q_j} \qquad (9)$$

where $a_{rw\ j}$ represent the technical coefficients of import goods and *rowp* represents a weighted price index which accounts for changes in the prices of imported products and services.

The twenty-five types of goods are also demanded by consumers and generate VAT indirect revenues, $R_{VAT:}$

$$R_{VAT} = \sum_{j=1}^{25} VAT_j (1+\tau_j)(\sum_{i=1}^{n} a_{ij} p_i Xd_j + ((1+EC_j) wl_j + rk_j) VA_j) + \sum_{j=1}^{25} VAT_j (1+t_j) rowp \, a_{rmj} Q_j \qquad (10)$$

where VAT_j is the *ad valorem* tax on good *j*, which taxes both domestic and foreign production.

Finally, government income accruing from direct income taxes, R_I, can be written as

$$R_I = \sum_{h=1}^{4} DT_h (wL_h + rK_h + cpi\, TPS_h + TROW_h - WC_h L_h w) \qquad (11)$$

where DT_h represents the tax rate on income for consumer *h*, which taxes consumers' income accruing from a variety of sources: the sale of the productive factors they possess, namely, labor L_h and capital K_h; transfers from the public sector TPS_h (pensions, social benefits, unemployment benefits, …); and transfers from the rest of the

world $TROW_h$, deducting direct contributions to social security $WC_h\ L_h$ w. Hence, total government revenue R is the sum of all six types of tax collections.

In our model, the public deficit PD is endogenously determined. Thus

$$PD = R - \sum_{h=1}^{4} TPS_h\, cpi - \sum_{j=1}^{25} GD_j\, p_j \qquad (12)$$

where tax revenues are determined by equations **(6)** to **(11)**. Both government transfers TPS_h and public expenditure GD_j are exogenously determined, so that the model is macroeconomically closed.

2.5. Foreign sector.

Since our analysis is based on the Andalusian regional economy, the foreign sector is modelled in a simple, aggregated way, namely, as a single foreign sector that includes the three trade partners. The levels of activity of the foreign sector are fixed exogenously, whereas the trade deficit is endogenously determined. We have chosen this way of macroeconomic closing for the model to be consistent with the concepts of government and public deficit established in 2.4. above.

Thus, the macroeconomic closing function for the foreign sector can be written as follows:

$$ROWD = rowp\ IMP_j - TROW - rowp\ EXP_j \qquad (13)$$

where $ROWD$ is the trade deficit, IMP_j and EXP_j are the demands for imports and exports.

2.6. The equilibrium.

Due to the fact that we have specified two technological functions regarding value-added, we obtain two different versions of the model. Both of them follow the standard walrasian concept of equilibrium, although we have also included the public and foreign sectors. In equilibrium, supply must be equal to demand in all non-labor markets. We consider full employment for the primary factors labor and capital. In addition, the levels of activity of the government and the foreign sector are fixed.

Following the Walrasian tradition, an equilibrium is a price vector, an allocation, and a level of tax revenues in which consumers maximize utility, producers maximize after-tax profits, government tax revenues are equal to the amount of taxes paid by all economic agents, all non-labor markets clear, the public deficit is endogenous, and so is the foreign deficit given export levels.

3. Database and calibration.

The numerical specification of the parameters in the model has been carried out by using the data in a Social Accounting Matrix for Andalusia (*SAMAND95*). Calibration consists, as is well known, in determining a set of coefficients and parameters which, under the conditions derived from the optimization problems of agents, allows the model to replicate the database as a benchmark equilibrium of the regional economy. We have obtained the following from the process of calibration: a) the technical coefficients of production sectors, both domestic and foreign; b) the technical coefficients of production factors that produce the unitary value-added in both versions of the model; c) the participation coefficients of the utility functions for

consumers; and d) the tax parameters which allow us to define the effective tax rates for all taxes, both direct and indirect.

The units used to express the economic variables in equilibrium have been chosen for the sake of convenience, in such a way that all prices and levels of activity are unitary in the benchmark equilibrium.

Finally, regarding the database, we have expanded *SAMAND95* as regards *Consumers*, disaggregating these in four different types. This disaggregation has been done according to Uriel et al.'s (1994) Social Accounting Matrix for Spain in 1990. A disaggregation based on a more recent *SAM* would have been more suitable, but Uriel et al.'s is the only one available at the moment. Thus, the four consumers in *SAMAND95* are: *Rural Consumers* (*RC*), *Urban Salaried Consumers* (*USalC*), *Urban Self-Employed Consumers* (*USelfC*), and *Rest of Urban Consumers* (*RoUC*).

4. Simulations.

The simulations we have carried out with the applied general equilibrium models for the Andalusian economy concern the reform of the personal income tax in 1999 (Act 40/98). More specifically, we have intended to capture the effects this reform would have had on the Andalusian economy if it had been implemented in the year 1995, which is the date of the more recent database available. We analyze the effects on prices, levels of investment, levels of activity, and other macroeconomic aggregates, as well as the compensating and equivalent variations of the different types of consumers, intending to capture their effect on consumers' welfare.

Since direct tax rates obtained from the calibration of *SAMAND95* are not nominal but effective, we could not simulate the reform by using the new marginal rates introduced by the reformed personal income tax. Additionally, consumers were not disaggregated by income level or average tax base, but by income types or sources. For these reasons, we have based on Castañer et al. (1998) and their estimation of the reduction for the Andalusian region, measured in variation rate on average effective rates. According to their estimation, this reduction amounts to 17.21 percent for Andalusia.

The results obtained by perturbing the equilibrium with the reduction of the effective direct tax for each type of consumer are shown in the comparative tables below (before and after the reform). As we stated above, we present two applied general equilibrium models, one which defines value added without factors substitution (AGEMANDFC, applied general equilibrium model for Andalusia with fixed coefficients) and another with factors substitution (AGEMANDCD, applied general equilibrium model for Andalusia with Cobb-Douglas technology).

(Table 1)

In Table 1, we compare the composition of the GDP, from the point of view of income and expenditure, before and after the reform, in both types of model. If we analyze the GDP from the point of view of expenditure, it can be seen that all items increase in magnitude in nominal terms, except in the AGEMANDCD simulation, where both “Investment” and “Foreign Sector” fall. Regarding the distribution of percentages relative to total GDP, notice that in both models the tendency is the same,

namely, participation in “Consumption” rises, whereas the rest of items fall, something that could be expected from this kind of simulation. The higher increase in “Consumption” becomes apparent when we obtain value-added with a fixed-coefficients technology.

If we analyze the GDP from the point of view of income, in nominal terms, we observe a generalized increase in all magnitudes, except “Employer’s Contribution to Social Security”, for both models. The reason for this is that, although we take as a starting point the hypothesis of full employment of production factors, and hence of the labor factor, there are several variations in the total output, and also in added-value because of disaggregation. Thus, total revenue decreases in net terms, since the tax rates of employer’s contributions by sectors remain constant. In the case of AGEMANDCD, both “Taxes on Production and Grants” and “VAT” also fall slightly, for similar reasons. Notice that “Labor” remains constant in both cases, since all simulations take salary as *numeraire*.

It is also worth noticing the increase in both “Capital” and “Tariffs”, which can be explained by the *warming* of the economy due to the reform. Regarding the distribution of percentages, only “Capital” rises, whereas the rest of items fall or remain the same, which confirms our above statement. Capital incomes are the ones that benefit most from the reform, and accordingly the most benefited consumer is the one who obtains the highest income from this source, as we will explain below.

Since the simulation is of a fiscal type, it is worth analyzing the changes in the revenues from the different taxes, before and after the reform, shown in Table 2.

(Table 2)

We can observe that the personal income revenue drops, what is explained by the reduction of the average rate. However, in AGEMADNFC, total tax revenue is dampened by the increase in VAT indirect revenues and tariffs, derived from the increase in the activity of most production sectors and imports. The decrease in revenue is more noticeable in the case of AGEMANDCD, although the tax burden (0.252% in the original situation), which is reduced in both cases, is lower in the fixed coefficients model, AGEMANDFC (0.231%), than in the variable coefficients model, AGEMANDCD (0.238%).

Regarding the influence of the reform on the levels of activity, these increase in general, particularly the sectors “Water”, “Textile and Leather”, “Commerce”, and “Other Services”, which increase by 1 percent in both models. The increase in the sector “Other Services”, which includes, among others, the services related to financial mediation, insurance, pension schemes, etc., perhaps evidences that part of the increase in disposable income is transferred to different financial products.

On the other hand, the sectors whose activity is reduced to a greater extent are, surprisingly, “Building Materials” and “Construction” (which fall by 3%), although these sectors typically reflect economic prosperity in any economy. The explanation for this may be that the fiscal reform favors an increase in consumption only, while savings are channeled into speculative investment, and thus are not physical capital. An additional explanation concerning the construction sector is that its growth in 1992 -

when a World Fair was held in Seville, the Andalusian capital- occasioned a great building excess. This is confirmed by the data regarding investment level, according to which value added decreases by 4.1 percent in the case of the model without factors substitution and by 4.5 percent in the case of the model with factors substitution.

With regard to consumers, we observe an increase in disposable income for the four types of consumers, due to the reduction in tax burden. This increase amounts to 0.252 per cent in the Leontief technology and to 0.231 percent in the Cobb-Douglas technology (Table 3).

Additionally, in order to measure consumer welfare, we have calculated both the *equivalent variation* and the *compensating variation*. Notice that the price index, which takes salary as *numeraire*, increases by 6.1 percent in the first model, what could be expected due to the positive impact a reduction in direct fiscal burden is bound to have. Accordingly, all consumers, who experience an increase in their disposable income, improve thanks to the welfare measures, being the *Urban Self-Employed Consumer*, as we anticipated, the one who benefits most from the reduction in the personal income tax. This can be explained by the fact that this consumer's income does not come from labor income basically (just by 22%) but from capital (by more than 77%). Thus, the reduction in the direct income tax is more advantageous to this consumer than to the rest of consumers (whose income structures are not so unequally distributed), since this tax concerns capital income as a whole and labor income partially, because part of it is exclusively taxed by the labor contribution.

(Table 3)

With regard to the second model, we observe an analogous increase in disposable income for the four types of consumers, due to the reduction in the tax burden from 0.252% to 0.238%, slightly lower than in the previous case.

This reduction produces an increase in consumers' disposable income, although to a lesser extent than in the fixed-coefficients model, being the *Urban Salaried Consumer* the one who benefits most from the reduction in the direct income tax. The possibility of factors substitution will produce a transfer in the use of the "least profitable" factor, labor, to the "most profitable" factor, capital. This situation would not be possible with a fixed-coefficients technology.

By taking the welfare measures discussed above, both *equivalent* and *compensating variation* are positive for all consumers, again being the *Urban Salaried Consumer* the one who benefits most.

(Table 4)

5. Conclusions.

We have presented two versions of an applied general equilibrium models of the andalusian economy to analyze the impact of the 1999 enacted income tax reform. The applied general equilibrium model of the Andalusian economy has enabled us to draw several conclusions on the basis of a number of variables and macromagnitudes: consumer prices, investment levels, levels of activity, GDP (both from the point of view of expenditure and income), and disposable income, as well as the compensating and equivalent variations of the different types of consumers, intending to capture their

effects on consumers' welfare. The analysis has been carried out by means of two models, with and without factors substitution, generating the composite value-added factor (AGEMANDCD and AGEMANDFC, respectively). A model with these characteristics generates a great amount of information, which can be summarized as follows.

Firstly, consumer prices of the various goods or services, in relative terms and according to the *numeraire*, as well as the rest of the prices defined (capital, import goods and investment goods) have been sensitive to the reform under analysis. This sensitivity is greater when value-added is obtained without factors substitution.

In both versions of the model, the levels of activity of the sectors show discrepancies with regard to their magnitude and direction. Production sectors of direct consumer goods (including financial sectors) are the most favored ones, whereas sectors related to physical investment ("Construction" and related sectors) are the worst affected.

In AGEMANDFC, the personal income tax revenue decreases, due to the reduction in its average rate. However, total tax revenue is dampened by the increase in indirect VAT revenues and tariffs, derived from the increase in the activity of most production sectors and imports.

Regarding AGEMANDCD, the reduction in the personal income tax revenue is lower, due to the lower reduction in tax burden. In net terms, there is a reduction in total revenue which is lower than in the alternative model.

In both cases, the investment level is reduced because of the increase in public deficit derived from the decrease in tax burden. Thus, according to the closing formula we have used, there is a reduction in tax burden so as to adjust to total savings. This provides support for the opinion of most macroeconomists, who think that an increase in public deficit has a discouraging effect on investment. This reduction is higher in the model with factors substitution.

Disposable income, quantified by taking salary as *numeraire*, improves for all four types of consumers, due to the reduction in tax burden. In any case, it is the *Urban Self-Employed Consumer* whose welfare increases most in AGEMANDFC, measured by means of the equivalent and compensating variations. In the alternative model, the improvements are not so substantial, being the *Urban Salaried Consumer* the one who benefits most from the reform.

Regarding GDP, notice that it increases in nominal terms due to the reduction in direct tax burden, at the same time that all its components increase from the point of view of expenditure in both models. This increase is higher in the fixed coefficients model. In the case of factors substitution, there is an exception to this behavior, namely, a slight reduction in "Investment".

With regard to income, the two applied general equilibrium models are not homogeneous. In the case of non-factors substitution, all components increase in nominal terms, due to the increase in the economic activity, and there is only a slight reduction in "Employer's Contribution to Social Security" and "Taxes on Production

and Grants". In the case of factors substitution, there is an increase in "Capital", "Tariffs", and "Taxes on Production and Grants", whereas the rest of items decrease.

As a general conclusion, we must point out that the positive effects of the reform manifest themselves more clearly in the case in which value-added is obtained by means of a fixed-coefficients technology, that is, a technology that does not allow the "adjustment" of the production structure to the new conditions. In the alternative case, the effects are also positive (although to a lesser extent) for the economy as a whole, as shown by the macromagnitudes analyzed, in spite of the fact that the adjustment to the new conditions is allowed by the technology and, accordingly, the situation depicted could somehow be argued to be closer to actual producers behavior.

The results of this simulation exercise must be cautiously interpreted, due to the great number of simplifications that have been necessary to develop it. In addition, statistic data sources possess great limitations with regard to updating. Despite these facts, we are able to draw several important and relevant conclusions from the static analysis we have carried out. All applied economic models are always subject to this kind of constraints. In the future, it is our aim to improve the model on several respects, such as its technical structure. However, the most important task is to elaborate statistical sources which are closer to the requirements of the model. This would include the disaggregation of consumers according to income levels, as well as updating the database *SAMAND95* with a new Input-Output Table designed by the regional statistics services, or else with non-survey techniques, such as *RAS*.

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7. Tables.

Table 1. GDP regarding expenditure and income (in millions of pesetas).

	Before Reform	After Reform (AGEMANDFC)	After Reform (AGEMANDCD)
Consumption	6276491	6750747	6382445
	69.59%	71.07%	70.60%
Investment	255465 4	2577874	2446684
	28.32%	27.14%	27.06%
Government Expenditure	2001000	2071086	2004350
	22.18%	21.80%	22.16%
Foreign Sector	-1811312	-1902060	-1792385
	-20.09%	-20.01%	-19.82%
GDP-expenditure	**9019023**	**9497647**	**9041094**
Labor	3190651	3190651	3190651
	35.37%	33.59%	35.29%
Capital	4534521	5005313	4557054
	50.27%	52.70%	50.40%
Employer's Contribution to	1119033	1118549	1118874
Social Security	12.40%	11.77%	12.37%
Tariffs	97693	103421	97699
	1.08%	1.08%	1.08%
Tax on Production and Grant	-520351	-549739	-519405
	-5.74%	-5.76%	-5.74%
VAT	597476	629452	596221
	6.62%	6.62%	6.60%
GDP-income	**9019023**	**9497647**	**9041094**

Source: *SAMAND95.*

Table 2. Effects on direct and indirect tax revenues (in millions of pesetas).

	Revenue before Reform	Revenue after Reform (AGEMANDFC)	Revenue after Reform (AGEMANDCD)
Taxes on Production	-520351	-549739	-519405
Tariffs	97693	103421	97699
Employer's Contributions to Social Security	1190033	1118549	1118874
VAT	597476	629452	596221
Personal Income Tax	698747	613169	580152
Workers' Contributions to Social Security	281902	281902	281902
Total Taxes	2274500	2196754	2155443
Tax Burden	0.252%	0.231%	0.238%

Source: *SAMAND95*

Table 3. Effects of the tax reform on consumers for AGEMANDFC (in millions of pesetas).

	Disposable Income (before Reform)	Disposable Income (after Reform)	Equivalent Variation	Compensating Variation
Rural Consumer	2017082	2167975	33277	31443
Urban Salaried Consumer	4290128	4600436	55341	52236
Urban Self-Employed Consumer	1277426	1420924	70910	67097
Rest of Urban Consumer	1341502	1427028	6801	6424

Source: *SAMAND95*

Table 4. Effects of the tax reform on consumers for MEGANDCD (in millions of pesetas).

	Disposable Income (before Reform)	Disposable Income (after Reform)	Equivalent Variation	Compensating Variation
Rural Consumer	2017082	2040103	17343	17392
Urban Salaried Consumer	4290128	4386834	84262	84502
Urban Self-Employed Consumer	1277426	1300495	19543	19596
Rest of Urban Consumer	1341502	1346233	9612	9639

Source: *SAMAND95*