Identity-centered Modeling in the Accountant of SNA Based Models

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The Accountant is the part of an Inforum model which converts income by industry -- divided perhaps among labor income, capital income, and indirect taxes -- to the income of various institutions: households, business, governments, and foreigners. The income of the households then is used in the consumption functions, while the income of businesses and governments may be either an end in itself or may influence investment, interest rates, government expenditures, or other variables.

In the accounting system used in the USA, this conversion is fairly simple. To get Personal disposable income from Gross domestic product (GDP), we just add or subtract interest payments, retained earnings of corporations, exports and imports of factor services, taxes, and government transfers. In contrast to this one simple equation involving about fifteen numbers, the same conversion in the Standard National Accounts (SNA) involves some 150 numbers connected by about 40 identities.

This multitude of identities makes handling the SNA an ideal case for what may be called *identity-centered* modeling. While econometric textbooks have concentrated virtually all of their attention on regression equations with identities dismissed with the comment that they can be used to eliminate a variable, another school of modeling has grown up which uses no regression at all but concentrates all its attention on identities and some behavioral proportions. This school uses primarily spreadsheets such as Lotus 1-2-3 to set up models which are then used to simulate various scenarios. Such modeling has proven extremely useful but also extremely limited. The formulas back of the spreadsheets are hard to see, the models are tricky to debug, selective display of results is difficult, and generalization to use regression equations is awkward. We shall show how the G-Build software can be used to accomplish such identity-centered modeling in a way which avoids the limitations of the spreadsheets and integrates easily into Inforum models built with Interdyme. We also explain some principles for constructing easy-to-use models of complex systems. Basically, this approach first sets out identities and replaces exogenous variables with others which are easier to think about. Once all the identities are operating, regression equations can be easily added to make some of the exogenous variables endogenous or to replace simple proportions with more satisfactory relations. I find this approach very attractive because it gets a workable model going fairly quickly and, at the same time, lays out a plan for further development.

Given the complexity of the SNA, it is hardly surprising that this part of the models of countries using the SNA has tended to be radically simplified. The French tradition of macroeconomic modeling, however, calls for a full treatment of the SNA accounts, perhaps because the SNA follows rather closely the ideas developed in the 1930's by a French economist,

Alfred Sauvigny. Paul Salmon was therefore understandably determined that FUR, the new French Inforum model, should reproduce this part of the SNA in full. In working together on FUR, he guided a complaining American (the author) through the complexities of this part of the SNA. In the end, we produced an Accountant which adds considerable richness without being overly difficult to use or maintain. As an extra benefit, we got the accounting framework for a quarterly macroeconomic model of France.

After this experience in France, I was asked to give a one-week course in macromodeling for doctoral students in Italy. There was considerable temptation just to present our American macro model. But, with the French experience in mind, I decided that it might be possible to develop a macro model with Italian data similar to the French model. The effort required to organize and master the data seemed justified by the fact that exactly the same files used for the quarterly model can be used to give INTIMO, the Italian model, a full-blown SNA accountant. We shall use this Italian example to illustrate the ideas of identity-centered modeling and as a suggestion for models of other countries which use the SNA.

Section 1 explains the SNA, which are not only unknown in countries which do not use them, but are almost equally mysterious because of their complexity to most economists in countries where they are used. Section 2 then applies the identity-centered approach to them. Finally, section 3 gives a brief account of what happens in the simple Italian quarterly model based on this handling of the SNA Accountant.

1. SNA Institutional Accounts

The SNA institutional accounts, as found in France and Italy, distinguish eight or nine institutions, which we will designate in variable names (based on their Italian names) as follows:

s	Società	Profit-seeking corporations
f	Famiglie	Families, family businesses, and non-profit private corporations
c	Credito	Banks and savings institutions
a	Assicurazione	Insurance
p	ammin. Pubblice	Governments
b	ser. fin. imputate	Imputed financial services (b for banks)
i	Importazione	Imports
t	Totale interno	Total of the above items
r	Resto del mondo	Rest of the world.

For France, the family businesses were separated out of families for some items but not for all. In Italy, this separation was not available at all. (This practice is quite a contrast to the strict separation of "persons" and "business" in the American accounts, which go so far as to create a "business" which rents owner-occupied houses to their owner-occupants. While this strict separation may seem artificial, it is essential to the simplicity of the American system.)

The SNA institutional accounts then unfold in a sequence of five accounts as shown in Appendix A for Italy in 1993. (This appendix, by the way, not only shows the data for 1993 but also gives the variable names in the G data bank containing the data. The name for the variable corresponding to a cell of the table is composed of the three or four letters to the left of the line followed by the letter at the top of the column, which indicate the institutions as described above.) Each of these accounts has a number of lines, each line showing the value for each institution of a particular type of transaction, such as the paying of wages. Nearly all such types of transactions have two lines, one corresponding to paying and the other to receiving. Each of the two lines of a particular type of transaction must have the same sum: what is paid is received. Each account contains a one or more "payment" lines and one or more "receipts" lines. The vector sum of the payment lines minus the vector sum of the receipts lines equals the "balance" line of the account. After the first account, the balance line of one account becomes the first receipts line of the next account. A major function of a model is to preserve the two types of identities we have just described. Of the first type, the "payments = receipts" kind, there are 24 explicit ones, plus two payments lines each of which sums to zero so that no matching receipts line and necessary, and one more, rather hidden identity which makes GDP divided among institutions of origin equal to GDP as the sum of consumption, investment, and net exports. Of the second type of identity, the kind which defines balances, there are 25, one for each of the five institutions in each of the five accounts.

It is not necessary that the payments line and receipts line for a type of transaction should fall in the same account. For example, the payments line for wages is in account 2, while the receipts line is in account 3. The points at which the balances are taken appear to be somewhat arbitrary, and yield some concepts which are not particularly useful, such as "Gross operating result", which makes some sense for non-financial firms but none for banks, for paying and receiving of interest are not part of "operating." On the other hand, some concepts for which numbers are certainly needed, such as a tax base, are missing from the official accounts. We can, however, supply them as needed, increasing the number of identities in the process.

The first account, the Production account, begins from the production of goods and services by each institution and subtracts intermediate consumption to produce Gross Domestic Product (GDP -- Prodotto Interno Lordo) divided among the institutions which produced it. This account has two rather strange entries which require explanation. The first is the positive contribution of the Value Added Tax (IVA) and other indirect taxes on imports to GDP (cell iiiEi). This entry arises because goods are valued in consumption at prices which include these indirect taxes, but are valued in imports (cell ibsEr) without them. Thus, curiously, some GDP is produced by taxing imports. Conversely, presumably, no Value added taxes are included for the production of exports.

The second group of curious items, barely understood by experts, is the Imputed value of financial services (cells sfiEc, sfiEa, coiEb, sfiUc, sfiUa, and sfiUb). The need for these imputations arises only because the concept "Gross operating result," the balance of the second account, makes no sense for financial institutions, as explained above. If we are willing to avoid using this concept, we can avoid any need for these imputations, for their sole purpose is to cover

up the inappropriateness of this concept for financial institutions. The result in the balance of the third account, Gross disposable income, is unaffected by these imputations, for exactly the same line which appeared as a receipts line in account 1 (sfiE) appears as a payments line (sfiU) in account 3. In the French and Italian accounts, all of the imputed financial services are considered to be consumed as intermediate goods, so that the estimate of their magnitude has no effect on GDP. For these countries, therefore, we can draw two simple conclusions:

The Gross operating result for Credit and for Insurance are artificial statistical creations without much economic content, while for Families and Governments the concept is rather strange anyway.

If we are prepared to dispense with this troublesome or meaningless concept of Gross operating result, we can collapse accounts two and three into one account and totally avoid any need for imputed financial services.

In the second account, called rather strangely the Distribution of Gross Domestic Product, we begin from GDP by institution, add subsidies, subtract Wages and Indirect taxes to get the notorious Gross operating result. With this account, we begin the conversion of GDP by institution to Gross disposable Income (GDI) by a process of adding and subtracting lines with the same total in the line subtracted as in the line added. For example, in account 2 we add subsidies (copE -- Contributi alla produzione) while in account 3 under Expenditures (copU) we subtract a line with exactly the same total. In essence, these two lines transfer these subsidies from Governments and the Rest of the world (i.e. the European Community) to Italian firms and families.

The third account, the Income account, continues the process begun in the second. Except for the last two lines of both halves of the account, what is added at one place is subtracted at another. The first line of the Expenditures section of account 3, which shows simply Wages coming from the Rest of the world may seem to be an exception. The rest of this line, however, was in the Expenditures section of Account 2, and the combined line is matched by the Receipts line (rldE) in Account 3. The names of the various pairs of lines are understandable with a minimal Italian vocabulary as follows:

Reddito (pl. redditi) - income
imprese - firms
Contributi -- what families pay for social insurance
Prestazioni -- what families get from social insurance
danni -- dammages
Aiuti -- aid
AA.PP. -- government (amministrazioni publichi)
ISV -- private, non-profit institutions. (Instituzioni sociali varie)

At the end of this third account, we have what the SNA calls Disposable income. It is, however, very different from the American Disposable income. In the SNA definition, from Disposable income there have already been deducted:

All consumer interest payments

Transfers to foreigners
The wages of domestic servants
Contributions to churches, schools, and other private non-profits.

In the American accounts, these items have not been deducted. The last two are part of Personal consumption expenditure while the first two are other "outlays." They are all clearly discretionary and should be modeled as part of the system of consumption functions. The concept of Personal income, which serves as a tax base in models of the American economy, is totally lacking in the SNA.

These problems and the problems with the imputed financial services all suggest that the SNA have drawn the lines for computing the balances at places which do not yield the most operational concepts for modeling. In the next section, other "balance lines" are suggested which give concepts more natural for modelling.

In the fourth account, the Use of income account, we begin with Disposable income, add and subtract Changes in retirement funds and then subtract National final consumption of families and governments to produce Gross savings.

Finally, in the fifth account, the Capital Formation Account, we begin with the Gross savings just calculated, and subtract Gross fixed investment and Change in inventories. Further small adjustments for taxes and transfers in the capital accounts by adding and subtracting paired lines and then subtracting two lines (each of which sum to zero) for exchange of land and non-material assets yield the net change in Assets or (if negative) in Debt.

Each account except the last has its balance shown both gross and net. The difference is capital consumption allowances (ammortamenti) by institution. The capital consumption allowance is the same in each line. The next account always begins from the gross balance, not the net balance. In some cases such as payment of dividends, however, it is natural to base behavior on the net quantities.

2. Modelling the SNA institutional accounts

The normal calculating procedure for a macro model is to assume a level of disposable income, calculate consumption expenditures, investment, imports, and exports to produce GDP and then convert this GDP into disposable income. If the income produced in this way differs from that assumed, we take the newly computed value as the starting point and repeat the process. In terms of the SNA accounts, we start at the top of Account 4, produce the components of GDP which appear in Accounts 4 and 5, along with exports and imports from account 3, and then go back to the top of Account 2. (Account 1 really plays no role in a macro model, while the balances of Accounts 4 and 5 are interesting memorandum items but enter into the circuit of equations only if the model has progressed far enough to have interest or exchange rates depending on these balances.

In a model built with Interdyme or Build, the structure of these accounts is represented in a file usually called Master for it represents the masterplan of the model. This Master file has three functions:

1. To ensure that all the identities of both type in the accounts have been satisfied and to introduce new balances as needed.
2. To replace hard-to-forecast exogenous variables in the accounts by "behavioral proportions" or other variables which are easier to forecast.
3. To include into the model statistically estimated behavioral equations.

It is the second of these, exogenous variable replacement, which requires the most art and thought and which occupies most of the Master file for modeling the Italian institutional accounts. No hint of this part of modeling process is to be found in any econometrics text of my acquaintance, yet it is probably the best way to lay out a model and get it going. Let me illustrate the process with three examples.

The second account contains the line Wages (redditi da lavora dipendente). Specifying wages to be paid by firms (Società) exogenously is not only difficult, it is more or less what we have a model for. If future nominal wages are to be left exogenous, why bother with a model? Fortunately, however, we have in the first line of this account the GDP originating in each sector. A significant part of this GDP is wages. Why not simply take the ratio of wages to GDP in each institutional sector as an exogenous variable? With the ratio known and the GDP in the sector known, the model can then easily calculate wages. What have we gained by this substitution? Superficially, not much. We have made one variable endogenous at the expense of adding another exogenous variable. But more substantively, we have done two important things. Firstly, the ratio is much more constant and much easier to forecast exogenously than was the absolute value of nominal wages. Secondly, we have introduced an element of economic behavior into the model. If we change GDP of firms, their wages will now automatically change if we leave the ratio variable unchanged. Thus, I call these ratios or proportions "behavioral proportions." A large part of the popularity of spreadsheets such as Lotus 1-2-3 derives from their use in making models which consist entirely of behavioral proportions and accounting identities. Such models have proven enormously useful in business and planning. Judicious choice of the ratios can give us a workable model of a complex object such as these accounts rather quickly. An econometric text which says to use any identity to eliminate a variable only confesses how far the author is from practical modeling. Practical models abound in identities.

A second example of exogenous variable replacement is provided by Gross fixed investment. The institutional accounts work in current prices and make sense only in current prices (or with the same deflator for all items). But many items, such as this one, are easier to specify for the future in constant prices. The Master file therefore makes them exogenous in constant prices. This constant-price exogenous variable will ultimately be replaced by statistically estimated regression equations. They will also have the dependent variable in constant prices.

Yet a third type of exogenous variable replacement is to make the growth rate of the item exogenous and then to calculate the level internally in the model. This device is useful for such

items as the quantity of money or level of prices, where we are more accustomed to think in growth rates than in absolute levels. Other relations, such as elasticities could also be used.

The mechanics of exogenous variable replacement is simple with Interdyme or Build. The new exogenous variable is defined with the "fex" command and then the original variable is calculated with an "f" command. For example, to establish and use a behavioral proportion between wages paid by firms (rldUs) and GDP in these firms (PILs), the commands are

```
fex rldUsr = rldUs/PILs
f   rldUs =  rldUsr*PILs
```

The "fex" calculates the variable on the left and puts in into the data bank of the model. It specifically does not put the equation into the model. The f command also calculates the variable and puts it into the data bank of the model. But it also puts the equation into the model. This combination of f and fex is the key to easy exogenous variable replacement. While something like the f command is available in all modeling software, the fex appears to be unique to Interdyme and Build. Other software seems to require that all exogenous variables should already exist in the data bank -- a result of basing software on textbooks that were written without much experience in practical modeling. It would be a good exercise at this point to write the equations to replace xxx in nominal (current-price) terms by xxxR in real terms, using xxxP as the price of xxx. Then write the equations to replace m2 by its growth rate.

Systematically working through the various accounts, specifying all the identities and replacing exogenous variables as appropriate, is the work of several days. It is more than slightly easy to make mistakes. Fortunately, it is almost equally easy to find most of them, for the master file is also a file of commands to G. When we have finished the computation of the balances of an account, say the third, we can put into the master file commands to graph the computed balances and the balances form the data on the same graph. For example,

```
gr RLDf a.RLDf
```

The "a." causes the second series to be taken from the "assigned" bank while the series without the "a." will be taken for the workspace bank, where it will have just been put after calculation according to the master file. If we can see two lines on this graph, there is an error in the master file. By commenting out lines of the master file, we can usually locate the error fairly promptly.

Let us see how these principles have been applied in the master file for a model based on the Italian institutional accounts. We wanted to use our master file not only as the Accountant of INTIMO, an annual model, but also as the master file of a quarterly model. Although the official institutional accounts are only annual, we have converted them to quarterly data in a way consistent with both the official quarterly data on final demands and all the annual data. The master file is slightly complicated by the fact that the Italian institutional accounts lag a year behind the accounts with consumption, investment, exports, imports, and wages. One of the uses of the model is to update the institutional accounts for this last year using all the available data and filling it out with the model. Variable names consisting only of small letters come from the bank with the extra year of data and are quarterly at quarterly rates, so they have to be multiplied by 4 to put them at the annual rates used in the model.

The file begins by putting into the model pilP, the deflator for GDP (or PIL -- Prodotto interno lordo).

fex pilP = pild/pilkd

We will also need the deflators for various components of GDP -- family consumption, government consumption, and so on. Instead of imposing on the user the task of independently specifying these price indexes, we will "replace" them by their ratio to the overall index.

```
# Indicatore di prezzi
fex cfP = (cfd/cfkd)/pilP # families
fex ccP = (ccd/cckd)/pilP # government
fex ifP = (ifd/ifkd)/pilP # fixed investment
fex icP = (icd/ickd)/pilP #  construction
fex itP = (itd/itkd)/pilP #  transport
fex imP = (imd/imkd)/pilP  #  machinery
fex venP = (vend/venkd)/pilP # inventory
fex impP = (impd/impkd)/pilP # imports
fex espP = (espd/espkd)/pilP # exports
#
f cfD = cfP*pilP
```

Next, we establish behavioral proportions for the ratio of Domestic consumption to National consumption. Domestic consumption goes into GDP, but National consumption is in the institutional accounts. Domestic consumption includes consumption of non-residents (tourists and business travelers) in Italy and excludes the consumption of Italians abroad. National consumption is the reverse.

```
# Components of GDP
# National final consumption
#   Factors to convert national consumption
#   to domestic consumption
fex CFNfr = CFNf/(cfd*4.)
fex CFNpr = CFNp/(ccd*4.)
# Put Domestic consumption into bank
fex CFIfR = cfkd*4.
fex CFIpR = cckd*4.
# Put real national consumption into data bank
f    CFNfR = CFIfR*CFNfr
f    CFNpR = CFIpR*CFNpr
```

For purposes of building the quarterly model, we provide here, as a comment, the command necessary to include the results of a regression equation for National final consumption of families. In the interindustry model, this figure would be the sum of the final demands. The dependent variable in the regression is *national* consumption, not domestic consumption, because the only income variable we have to use as the independent variable is *national* income.

```
# To put in regression equation for Real National
# consumption of families, remove # on next line
#add CFNfR.sav
# Convert National consumption to Domestic
f   CFIfR = CFNfR/CFNfr
f   CFIpR = CFNpR/CFNpr
# Convert real consumption to nominal
f   CFIf = CFIfR*cfP*pilP
f   CFIp = CFIpR*ccP*pilP
# Convert domestic nominal to national nominal
f   CFNf = CFIf*CFNfr
f   CFNp = CFIp*CFNpr
```

Next we bring total real fixed investment into the data bank, provide for inclusion of possible regression equations to determine it, convert from real to nominal terms, and distribute to the sectors which produce it. To insure that the total GDP -- no more and no less -- is distributed, we make the share going to firms a residual. Note that a large share, not a small one, is made the residual. If a small share were made the residual, we might easily find that the exogenous projections of the large shares implied a negative residual for as an item which can

in principle only be positive. By specifying the small shares exogenously and taking the largest as the residual, that problem is unlikely to occur.

```
# Bring total real fixed investment into data bank
fex IFLtR = 4.*ifkd
# Provide for inclusion of regression equations
# for fixed investment
#add ifltr.sav
# Convert from real to nominal
f   IFLt  = IFLtR*ifP*pilP
# Establish exogenous ratios for dividing total
# investment among the institutional sectors
# which pay for it.
fex IFLfr = IFLf/IFLt
fex IFLcr = IFLc/IFLt
fex IFLar = IFLa/IFLt
fex IFLpr = IFLp/IFLt
fex IFLir = IFLi/IFLt
f   IFLf = IFLfr*IFLt
f   IFLc = IFLcr*IFLt
f   IFLa = IFLar*IFLt
f   IFLp = IFLpr*IFLt
f   IFLi = IFLir*IFLt
# Make firms the residual
f   IFLs = IFLt - IFLf - IFLc - IFLa - IFLp - IFLi
```

Inventory change is next treated similarly.

```
# Make inventory change exogenous in real terms
fex   VDStR = venkd*4.
#add vdstr.sav
# Convert to nominal terms
f   VDSt = VDStR*venP*pilP
# Divide between firms and families, with firms
# the residual
fex VDSfr = VDSf/VDSt
f   VDSf = VDSfr*VDSt
f   VDSs = VDSt-VDSf
```

Finally, we apply the "exogenous-in-real-terms" approach to replace nominal exports and imports with real exports and imports as exogenous variables.

```
# Put imports and exports into bank in real terms
fex  IBSrR = impkd*4.
# Provide for possible import equation
# for quarterly model.
#add ibsrr.sav
# Convert to nominal terms
f   IBSr  = IBSrR*impP*pilP
fex   EBSrR = espkd*4.
f   EBSr  = EBSrR*espP*pilP
```

We now have all the elements of GDP (PIL in Italian), and we can add them up to get the totals in both real and nominal terms.

```
# Prodotto interno lordo
f PIL = CFIf+CFIp+IFLt+VDSt+EBSr-IBSr
f PILR = CFIfR+CFIpR+IFLtR+VDStR+EBSrR-IBSrR
```

So far, we have been working with variables which appear in Accounts 3, 4, an 5. In an input-output model, these items would all be given as the column sums of final demand columns. With these variables given, we can now commence the sequence of institutional accounts with Account 1. When we need these values in the later accounts, we will have values which are consistent with the total GDP (= PILt) with which we began Account 1. We will work without imputed financial services, for the intermediate products which depend on the imputations are of little interest to us. Thus, our values of GDP originating in Credit and Insurance will be smaller than in the official statistics, and we will let Gross operating result for the two sectors

be negative without batting an eyelash, for we shall be careful not to use these values for anything except the identities defining the further balances.

```
# ACCOUNT 1: Production (without imputed financial
services)
# Distribute GDP (PIL) to producing institutions
# with exogenous shares. Families are the residual.
fex PILsr = PILs/PIL
fex PILcr = (PILc-sfiEc)/PIL
fex PILar = (PILa-sfiEa)/PIL
fex PILpr = PILp/PIL
fex PILir = PILi/PIL
f PILs = PILsr*PIL
f PILc = PILcr*PIL
f PILa = PILar*PIL
f PILp = PILpr*PIL
f PILi = PILir*PIL
f PILf = PIL-PILs-PILc-PILa-PILp-PILi #-PILb
```

We make capital consumption allowances (ammortimenti) exogenous in constant prices. In a developed model, they might well be modeled as functions of past investment by each institution.

```
# Capital consumption
# Ammortamenti
fex ammUsR = ammUs/pilP
fex ammUfR = ammUf/pilP
fex ammUcR = ammUc/pilP
fex ammUaR = ammUa/pilP
fex ammUpR = ammUp/pilP
f ammUs = ammUsR*pilP
f ammUf = ammUfR*pilP
f ammUc = ammUcR*pilP
f ammUa = ammUaR*pilP
f ammUp = ammUpR*pilP
# Net Domestic Product
# Prodotto interno netto
f PINs  = PILs - ammUs
f PINf  = PILf - ammUf
f PINc  = PILc - ammUc
f PINa  = PILa - ammUa
f PINp  = PILp - ammUp
f PINi  = PILi
```

With Account 1 behind us, we turn to Account 2. The first item we need to deal with is subsidies to production. Where possible, we want to make the variables which represent decision making, especially policy decision making, the exogenous variables. For subsidies, we therefore take the total subsidies paid by the Italian government and by the EC to Italian firms as the exogenous variables (in real terms). Their sum then becomes endogenous while the shares going to different industries are exogenous, with firms getting the residual share.
This is a pattern which we shall follow frequently in the remaining accounts.

```
Account 2: Distribution of GDP
# Subsidies (Contributi alla produzione)
# Make payment of subsidies exogenous in
# constant prices.
fex copUpR = copUp/pilP
fex copUrR = copUr/pilP
f copUp = copUpR*pilP
f copUr = copUrR*pilP
f copT = copUp + copUr
# Distribute to recipients
#  with firms as residuals.
fex copEcr = copEc/copT
fex copEfr = copEf/copT
f copEc = copEcr*copT
f copEf = copEfr*copT
f copEs = copT - copEc -copEf
```

The official order of the accounts next deducts wages paid. But here we break ranks from the accounts in the official order, because we need some reasonable measure of output of Credit and Insurance in order to determine wages in those institutions. To get that measure of output, we take Interest payments next. These payments by the various institutions will almost certainly become the object of behavioral equations involving interest rates and debt. We have therefore left the payments by institutions other than credit exogenous in current prices. Interest received by Credit institutions is made a behavioral proportion of the total paid by non-credit institutions. Interest paid by credit institutions is made a proportion of interest received by those institutions. Total interest paid is then calculated and distributed among the various recipient institutions with behavioral proportions.

```
# Monetary interest     **********
# ineST is interest paid excluding that paid by
# credit institutions
f ineST  = ineUs + ineUf + ineUa + ineUp + ineUr
fex ineEcr = ineEc/ineST
f ineEc = ineEcr*ineST
fex ineUcr = ineUc/ineEc
f ineUc = ineUcr*ineEc
f ineEST = ineST + ineUc - ineEc # pagati agli inst.
non di credito
fex ineEsr = ineEs/ineEST
fex ineEfr = ineEf/ineEST
fex ineEar = ineEa/ineEST
fex ineEpr = ineEp/ineEST
f ineEs = ineEsr*ineEST
f ineEf = ineEfr*ineEST
f ineEa = ineEar*ineEST
f ineEp = ineEpr*ineEST
f ineEr = ineEST - ineEs - ineEf - ineEa - ineEp
# Interessi imputati sulle reserve tecniche di
assicurazione ***
f iniEf = iniUa
```

Now comes a new balance item, not found in the official accounts, which I have called simply "GDP plus interest" (PIL piu interessi or PPI in Italian). It is just GDP by institution plus interest received minus interest paid. It gives a reasonable base of value originating in the financial institutions.

```
# PPI = PIL piu interssi
f PPIs = PILs + ineEs - ineUs
f PPIf = PILf + ineEf - ineUf
f PPIc = PILc + ineEc - ineUc
f PPIa = PILa + ineEa - ineUa
f PPIp = PILp + ineEp - ineUp
```

Wages (income of employed labor) can now be expressed as a behavioral proportion of PPI for the financial institutions but of Net domestic product (NDP or Italian PIN) for the others. PPI is quite inappropriate as a base for government, for it is far less than wages of government workers. These wages, on the other hand, are almost the whole of NDP of government. With the wages calculated, we do indirect taxes very similarly. We can then calculate Gross and Net operating resulting by the official identities to wind up Account 2.

```
# Wages = Redditi da lavora dipendente
fex rldUsr = rldUs/PINs
fex rldUfr = rldUf/PINf
fex rldUcr = rldUc/PPIc #Note PPI here
```

```
fex rldUar = rldUa/PPIa # and here
fex rldUpr = rldUp/PINp
f rldUs = rldUsr*PINs
f rldUf = rldUfr*PINf
f rldUc = rldUcr*PPIc
f rldUa = rldUar*PPIa
f rldUp = rldUpr*PINp
f rldT = rldUs + rldUf + rldUc + rldUa +rldUp + rldUr
# Indirect taxes = Imposte indirette sulla
# produzione e sulle importazioni
fex iipUsr = iipUs/PILs
fex iipUfr = iipUf/PILf
fex iipUcr = iipUc/PPIc
fex iipUar = iipUa/PPIa
fex iipUpr = iipUp/PILp
f iipUs = iipUsr*PILs
f iipUf = iipUfr*PILf
f iipUc = iipUcr*PPIc
f iipUa = iipUar*PPIa
f iipUp = iipUpr*PILp
f iipUi = PILi
f iipT  = iipUs + iipUf + iipUc + iipUa + iipUp + iipUi
# Risultato lordo di gestione
f RLGs = PILs + copEs - rldUs - iipUs
f RLGf = PILf + copEf - rldUf - iipUf
f RLGc = PILc + copEc - rldUc - iipUc
f RLGa = PILa - rldUa - iipUa
f RLGp = PILp - rldUp - iipUp
f RLGi = PILi - iipUi
# Risultato netto di gestione
f RNGs  = RLGs - ammUs
f RNGf  = RLGf - ammUf
f RNGc  = RLGc - ammUc
f RNGa  = RLGa - ammUa
f RNGp  = RLGp - ammUp
f RNGi  = RLGi
```

We are now ready for Account 3, the Income account. The Wages already calculated are given, except for a small fraction going to the Rest of the world, to families. Similarly, the indirect taxes already calculated as payments become receipts for government and the Rest of the world, in this case, the EC. As a base for a behavioral proportion for payments for the use of land and for the payment of dividends, we need a balance item which includes the interest income of the financial institutions and the labor income of families. The official accounts provide no such base, so we create one. I have called it the Generalized operating result (RGG - Risultato generalizato di gestione in Italian). These operations are described by the following lines.

```
# Account 3: Income -- Conto di reddito
#
# Wages received -- Redditi da lavora dipendente **
fex rldErr = rldEr/rldT
f rldEr = rldErr*rldT
f rldEf = rldT - rldEr
# Indirect taxes --Imposte indirette sulla produzione e
sulle importazioni ***
fex iipErr = iipEr/iipT
f iipEr = iipErr*iipT
f iipEp = iipT - iipEr
```

```
# Redditi prelevati dai membri delle società
fex rpsUsr = rpsUs/RLGs
f rpsUs = rpsUsr*RLGs
fex rpsEpr = rpsEp/rpsUs
f rpsEp = rpsEpr*rpsUs
f rpsEf = rpsUs - rpsEp
# Generalized operating result
# Risultato generalizato di gestione
f RGGs = RLGs+ineEs-rpsUs-ineUs
f RGGf = RLGf+rldEf+rpsEf+ineEf-ineUf
f RGGc = RLGc+ineEc-ineUc
f RGGa = RLGa+ineEa-ineUa
f RGGp = RLGp+ rpsEp+ iipEp+ ineEp-
p       copUp- ineUp
```

Proprietor income is both subtracted from the income of family firms and added to the income of families without any net effect on family income. We have therefore not included the variable. We now use the Generalized operating result (RGG) just calculated as the base of behavior proportions for payments of rent for the use of land and immaterial rights and for the payment of dividends. The total payments of each of these payments lines is then distributed among the receiving institutions by behavioral proportions.

```
# Rents -- Rendite dei terreni e dei beni immatreriali
fex terUsr = terUs/RGGs
fex terUfr = terUf/RGGf
fex terUcr = terUc/RGGc
fex terUar = terUa/RGGa
fex terUpr = terUp/RGGp
f terUs = terUsr*RGGs
f terUf = terUfr*RGGf
f terUc = terUcr*RGGc
f terUa = terUar*RGGa
f terUp = terUpr*RGGp
f    terT    =    terUs+terUf+terUc+terUa+terUp    +
              terUr
fex terEsr = terEs/terT
fex terEfr = terEf/terT
fex terEcr = terEc/terT
fex terEar = terEa/terT
fex terEpr = terEp/terT
f terEs = terEsr*terT
f terEf = terEfr*terT
f terEc = terEcr*terT
f terEa = terEar*terT
f terEp = terEpr*terT
f  terEr  =  terT  -  terEs  -  terEf  -  terEc  -  terEa  -
              terEp
```

```
# Dividendi e altri utili distribuiti dalle societa'
fex divUsr = divUs/(RGGs-ammUs)
fex divUcr = divUc/(RGGc-ammUc)
fex divUar = divUa/(RGGa-ammUa)
f divUs = divUsr*(RGGs-ammUs)
f divUc = divUcr*(RGGc-ammUc)
f divUa = divUar*(RGGa-ammUa)
f divT = divUs+divUc+divUa + divUr
fex divEsr = divEs/divT
fex divEfr = divEf/divT
fex divEcr = divEc/divT
fex divEar = divEa/divT
fex divEpr = divEp/divT
f divEs = divEsr*divT
f divEf = divEfr*divT
f divEc = divEcr*divT
f divEa = divEar*divT
f divEp = divEpr*divT
f divEr = divT-divEs-divEf-divEc-divEa-divEp
```

Insurance premiums and compensation for damages are handled on a net basis for each institution, each exogenous in constant prices.

```
# Premi netti e Indennizzi di assicurazione contro
# i danni fatti in una riga, entrate - uscite.
fex assEsR = (iadEs - pnaUs)/pilP
fex assEcR = (iadEc - pnaUc)/pilP
fex assEpR = (iadEp - pnaUp)/pilP
f assEs = assEsR*pilP
f assEc = assEcR*pilP
f assEp = assEpR*pilP
f assEf = -(assEs + assEc + assEp)
```

The next line in the Income account collects current taxes on income and property from all the institutions and pays them all to governments. Unfortunately, the official accounts provide no concept, no balance, appropriate to use as the base for these taxes. So we have to create one. I have called it simply "Tax base" or TXB. It begins from our version of the official Gross operating result (that is, defined without imputed financial services), adds interest received, deducts interest paid, adds rents received, deducts those paid, adds net insurance receipts, and adds dividends received but does deduct dividends paid, because of the double taxation of dividends. The taxes are then made a behavioral proportion of this tax base for each institution, and are paid entirely into governments. No Tax base is calculated for governments, for it would be close to zero; instead, the Gross operating result is used as the base of the ratio for determining the relatively small amount of taxes paid by governments.

```
# Tax base (txb)
# N.B. Dividends are included in TXB
# as Receipts but not as Payments.
f TXBs = RLGs+ineEs+terEs+divEs+
       assEs-rpsUs-ineUs-terUs
f TXBf = RLGf+ rldEf+ rpsEf+ ineEf+ iniEf+   terEf+
divEf+ assEf- ineUf- terUf
f TXBc = RLGc+ineEc+terEc+
       divEc+assEc-ineUc-terUc
f TXBa = RLGa+ineEa+terEa+
       divEa-ineUa-terUa
# Imposte correnti sul reddito e patrimonio ***
fex irpUsr = irpUs/TXBs
fex irpUfr = irpUf/TXBf
fex irpUcr = irpUc/TXBc
fex irpUar = irpUa/TXBa
fex irpUpr = irpUp/RLGp
f irpUs = irpUsr*TXBs
f irpUf = irpUfr*TXBf
f irpUc = irpUcr*TXBc
f irpUa = irpUar*TXBa
f irpUp = irpUpr*RLGp
f irpEp = irpUs+irpUf+irpUc+irpUa+irpUp
```

Contributions for social insurance come in two flavors, effective and figurative. The effective are taken out of the pay check or are paid directly by self-employed. They appear as a payment only under families. The figurative are employer-share payments and appear as payments under all institutions. As a base for the behavioral proportion for effective contributions, we take GDP originating in families plus the wages received by families. For the employer's share, we take wages paid by each institution as the base of the behavioral ratio.

```
# Contributions for social insurance
# Contributi sociali effettivi
fex cseUfr = cseUf/(PILf+rldEf)
f cseUf = cseUfr*(PILf+rldEf)
fex cseEsr = cseEs/cseUf
fex cseEar = cseEa/cseUf
f cseEs = cseEsr*cseUf
f cseEa = cseEar*cseUf
f cseEp = cseUf - cseEs - cseEa
```

```
# Contributi sociali figurativi *
fex csfEsr = csfEs/rldUs
fex csfEfr = csfEf/rldUf
fex csfEcr = csfEc/rldUc
fex csfEar = csfEa/rldUa
fex csfEpr = csfEp/rldUp
f csfEs = csfEsr*rldUs
f csfEf = csfEfr*rldUf
f csfEc = csfEcr*rldUc
f csfEa = csfEar*rldUa
f csfEp = csfEpr*rldUp
f csfUf = csfEs+csfEf+csfEc+csfEa+csfEp
```

What families receive from social insurance originates as payments from all of the institutions. At present, these payments have been left exogenous in current prices, though they should be made at least exogenous in constant prices. There then follow a number of small items which will not be commented in detail.

```
# Payments to social security recipients
# Pestazioni sociali *
f prsT = prsUs+prsUf+prsUc+
              prsUa+prsUp+prsUr
fex prsErr = prsEr/prsT
f prsEr = prsErr*prsT
f prsEf = prsT - prsEr
# Transfers between governments
# Trasferimenti correnti tra AA. PP.
# Could be omitted, since the payments cancel the
# receipts in the same institution.
f ttaEp = ttaUp
# Current transfers to private non-profit institutions
# Trasferimenti correnti alle institutioni sociali varie *
fex taiUfr = taiUf/TXBf
f taiUf = taiUfr*TXBf
f taiEf = taiUfr + taiUc + taiUp + taiUr
# International aid
# Aiuti internazionali correnti **
# What is paid by the EC is received by the Italian
# government, and what is paid by the Italian
# government is received by the Rest of the world.
f aicEp = aicUr
f aicEr = aicUp
# Private transfers with the Rest of the world
# Trasferimenti privati con il RdM **********
```

```
fex tprUfr = tprUf/TXBf
f tprUf = tprUfr*TXBf
f tprEr = tprUf
f tprEf = tprUr
# Various private transfers
# Trasferimenti correnti diversi
fex tcdUsR = tcdUs/pilP
f tcdUs = tcdUsR*pilP
fex tcdUfR = tcdUf/pilP
f tcdUf = tcdUfR*pilP
fex tcdUpR = tcdUp/pilP
f tcdUp = tcdUpR*pilP
fex tcdUrR = tcdUr/pilP
f tcdUr = tcdUrR*pilP
f tcdT = tcdUs+tcdUf+tcdUp + tcdUr
fex tcdEsr = tcdEs/tcdT
f tcdEs = tcdEsr*tcdT
fex tcdEfr = tcdEf/tcdT
f tcdEf = tcdEfr*tcdT
fex tcdErr = tcdEr/tcdT
f tcdEr = tcdErr*tcdT
f tcdEp = tcdT - tcdEs - tcdEf - tcdEr
```

At last we are ready for the Gross disposable income, the first official balance which we can reproduce exactly without the imputed financial services. As a check on the equations, we immediately graph the calculated values and the values in the data bank on the same graph by the command "add master" within G. The two lines on the graphs thus produced should coincide. If they do not, we can look for the error by placing comment marks (#) in front of preceding lines. If we comment out all preceding definitions and still have a divergence, we have an error in writing the balance equations. Once we get the lines to coincide with preceding definitions commented out, we remove those comments block by block until the difference reappears. When it does, we know that we have just un-commented the error. Here are the balance definitions and graph commands.

```
# Gross disposable income
# Reddito Lordo Disponibile **
f RLDs = RLGs+ ineEs+ terEs+ divEs+ assEs+ cseEs+ csfEs+ tcdEs- rpsUs- ineUs- terUs- divUs- irpUs- prsUs- tcdUs
f RLDf = RLGf+rldEf+rpsEf+ineEf+iniEf+terEf+divEf+assEf+csfEf+prsEf+taiEf+tprEf+tcdEf-
         ineUf-terUf-irpUf-cseUf-csfUf-prsUf-taiUf-tprUf-tcdUf
f RLDc = RLGc+ineEc+terEc+divEc+assEc+cseEc+csfEc+aicEc+tprEc+tcdEc-ineUc-terUc-divUc-
         irpUc-prsUc-taiUc-tcdUc
f RLDa = RLGa+ineEa+terEa+divEa+iadEa+cseEa+csfEa-ineUa-iniUa-terUa-divUa-pnaUa-irpUa-prsUa

f RLDp = RLGp+rpsEp+iipEp+ineEp+terEp+divEp+assEp+irpEp+cseEp+csfEp+ttaEp+
         aicEp+tcdEp-copUp-ineUp-terUp-irpUp-prsUp-ttaUp-taiUp-aicUp-tcdUp
f RLDt = RLDs+RLDf+RLDc+RLDa+RLDp
f RLDfR = RLDf/cfD
ti RLD
gr RLDs a.RLDs
gr RLDf a.RLDf
gr RLDc a.RLDc
gr RLDa a.RLDa
gr RLDp a.RLDp
```

In Account 4, we finally use the final consumption items, CFNf and CFNp, with which we began. In fact, the only thing else in this account is the change in retirement account balances, which we model on the payments side as a behavioral proportion of wages paid by the different institutions. The whole account follows.

```
# Account 4: Use of income
# Conto di utilizzazione del reddito
#
# Changes in retirement accounts
# Variazione dei fondi di quiescenza
fex vfqUsr = vfqUs/rldUs
f vfqUs = vfqUsr*rldUs
fex vfqUfr = vfqUf/rldUf
f vfqUf = vfqUfr*rldUf
fex vfqUcr = vfqUc/rldUc
f vfqUc = vfqUcr*rldUc
fex vfqUar = vfqUa/rldUa
f vfqUa = vfqUar*rldUa
f vfqEf = vfqUs+vfqUf+vfqUc+vfqUa
```

```
# GROSS SAVING -- RISPARMIO LORDO
f RILs = RLDs-vfqUs
f RILf = RLDf+vfqEf-vfqUf - CFNf
f RILc = RLDc-vfqUc
f RILa = RLDa-vfqUa
f RILp = RLDp - CFNp
```

The final account, the Capital formation account, uses the fixed capital investment and the inventory change figures which we determined near the top of the master file. In a multisectoral model, these will be sums of sector-level variables. This account also has various subsidies to investment, taxes in capital account, buying and selling of land and immaterial goods, and a catch-all category of other transfers in capital account. These are only very vaguely described in the Italian publications and should be better understood before calling this part of the model finished. Here is the whole of this account.

```
# Account 5. Capital formation
# Conto della formazione del capitale
#
# Contributi agli investimenti
fex caiEsr = caiEs/IFLs
fex caiEfr = caiEf/IFLf
fex caiEcr = caiEc/IFLc
fex caiEar = caiEa/IFLa
fex caiEpr = caiEp/IFLp
fex caiErR = caiEr/pilP
fex caiUrR = caiUr/pilP
f caiEs = caiEsr*IFLs
f caiEf = caiEfr*IFLf
f caiEc = caiEcr*IFLc
f caiEa = caiEar*IFLa
f caiEp = caiEpr*IFLp
f caiEr = caiErR*pilP
f caiUr = caiUrR*pilP
f caiUp = caiEs+caiEf+caiEc+caiEa+
      caiEp+caiEr-caiUr
#
# Imposte in conto capitale
#
fex iccUsr = iccUs/IFLs
fex iccUfr = iccUf/IFLf
fex iccUcr = iccUc/IFLc
fex iccUar = iccUa/IFLa
f iccUs = iccUsr*IFLs
f iccUf = iccUfr*IFLf
f iccUc = iccUcr*IFLc
f iccUa = iccUar*IFLa
f iccEp = iccUs+iccUf+iccUc+iccUa
#
# Altri trasferimenti in conto capitale
# fatti in termini netti
fex tcnEsR = (tccEs - tccUs)/pilP
fex tcnEfR = (tccEf - tccUf)/pilP
fex tcnEcR = (tccEc - tccUc)/pilP
fex tcnEaR = (tccEa - tccUa)/pilP
f tcnEs = tcnEsR*pilP
f tcnEf = tcnEfR*pilP
f tcnEc = tcnEcR*pilP
f tcnEa = tcnEaR*pilP
f tcnEp = -(tcnEs+tcnEf+tcnEc+tcnEa)
# Acquisti netti dei terreni
#
fex antUsr = antUs/IFLs
fex antUcr = antUc/IFLc
fex antUar = antUa/IFLa
fex antUpr = antUp/IFLp
f antUs = antUsr*IFLs
f antUc = antUcr*IFLc
f antUa = antUar*IFLa
f antUp = antUpr*IFLp
f antUf = -(antUs+antUc+antUa+antUp)
#
# Acquisti netti di beni immateriali
#
fex aniUsr = aniUs/IFLs
f aniUs = aniUsr*IFLs
fex aniUfr = -aniUf/aniUs
f aniUf = -aniUfr*aniUs
f aniUr = aniUf - aniUs
```

```
#
# ACCREDITAMENTO O INDEBITAMENTO (-)
#
f ACCs = RILs + caiEs + tcnEs - IFLs - VDSs -
         antUs - aniUs - iccUs
f ACCf = RILf + caiEf + tcnEf - IFLf - VDSf -
         antUf - aniUf-iccUf
f ACCc = RILc + caiEc + tcnEc - IFLc - antUc-
         aniUc - iccUc
f ACCa = RILa + caiEa + tcnEa - IFLa- a n t U a
         aniUa - iccUa
f ACCp = RILp + caiEp + iccEp + tcnEp -
         IFLp- antUp - aniUp - caiUp - iccUp
```

For making a macro model from this file, the following two statements are necessary to make the program check the convergence of the model on family disposable income and to indicate the end of the commands.

```
check RLDfR 10
q
```

3. The Berti Quarterly Model of Italy

With minor modifications, the model produced so far can be built with either annual or quarterly data, depending upon which data bank is assigned when the master file is processed by Build or Idbuild. For use with INTIMO, the annual bank would be assigned. For use as the accounting structure of a free-standing macro model, the quarterly bank can be used. To explore some macroeconomic properties of the Italian economy, we went in the second direction before going in the first.

The identities and behavioral proportions described in the previous section already constitute a model. I have called it the "tautological model" because, if it is run in historical simulation, it will reproduce exactly the values of the endogenous variables. Achieving that result, by the way, is not so simply as you might think, since there are hundreds of places where a slight error, a single letter wrong, can make the model fail this tautological test.

A tautological model can be quite useful. With this one, any one of the some 170 exogenous variables can be varied and the results studied. As described here, this particular tautological model is so open that the reactions to changes are limited. By adding a behavioral proportion between family disposable income and family consumption, a simple Keynesian multiplier model could be had. Other behavioral proportions could be added between imports and domestic demand or between disposable income and investment of the various institutions. With enough such additions, the tautological model could become a quite complete description of the economy.

An alternative approach is to use regression equations for the additional relations. I have followed this route to produce Berti, a very simple quarterly model of Italy, built and used by

students in the summer course for doctoral students at Bertinoro. So far, only five regression equations have been added:

Family consumption as a function of family disposable income

Fixed investment in

Machinery

Transportation equipment

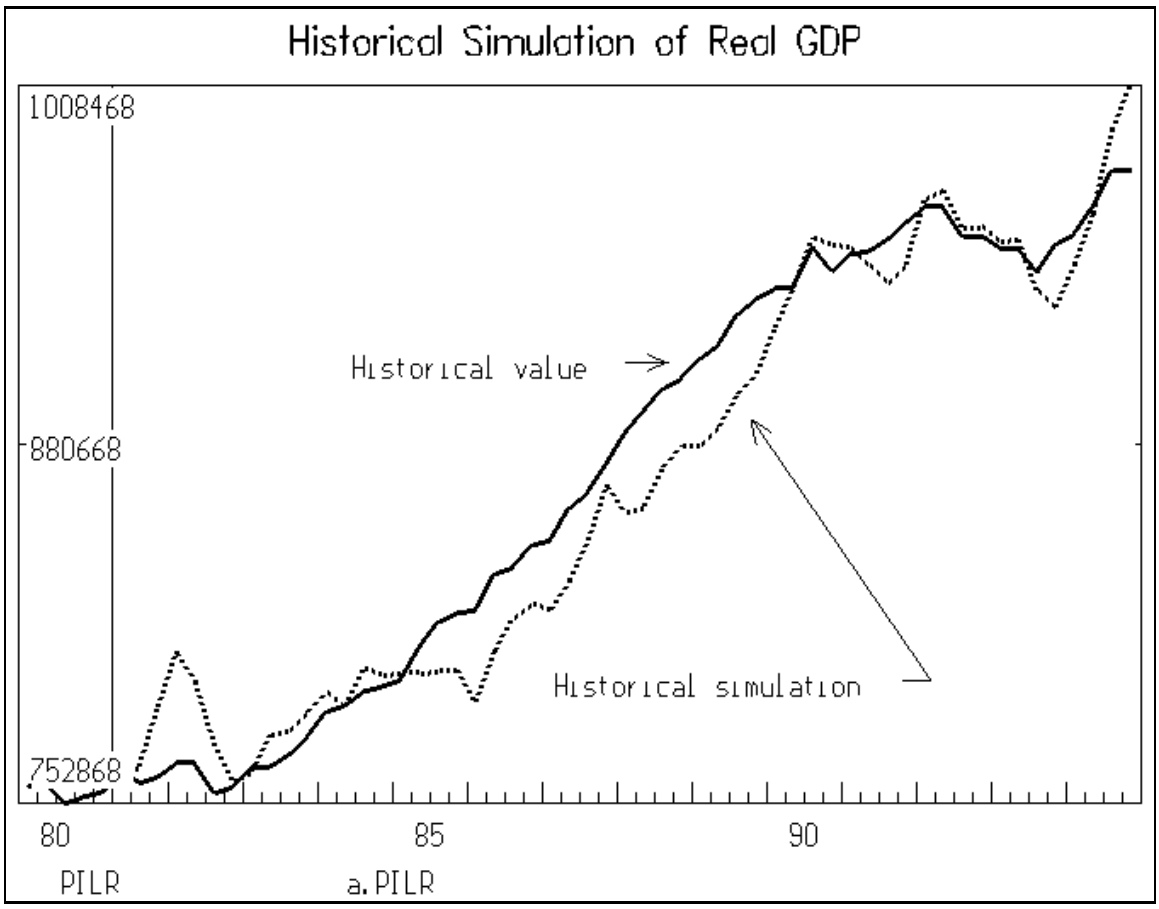
Construction

as functions of replacement of the type of capital in question and lagged values of the first differences in peak real GDP.

Imports as a function of domestic demand.

The result is a model which reproduces the general growth of the last decade, as shown in the accompanying graph of the real GDP. The model, however, shows much more fluctuation than did the economy. Monetary factors, terms of trade and exchange rate policy, interest rates, employment and unemployment all need to be added for a more complete understanding of Italian macroeconomics. It appears to me that it will also be necessary to supplement the SNA accounts which, for all their institutional minutia, fail to provide such fundamental variables as government construction separate from private construction or defense purchases separate from non-defense spending.

Forecasts with the current version of Berti have indicated little growth in prospect. A fundamental fact is that the marginal propensity to import in Italy is about .5 or more. Demand stimulation does not work as a growth policy because the stimulus gets sent mostly abroad. Hence, exporting, competing in world markets becomes the hope of Italy for future growth. And that poses a good question for the INTIMO team: What promotes, at the sectoral level, the capacity to export? And what are the macroeconomic consequences of improved exports? That can be one of the applications of a new Accountant with institutional detail.


Historical Simulation of Real GDP
1008468
880668
752868
Historical value
Historical simulation
80
85
90
PILR
a.PILR

SNA Institutional Accounts and Variable Names in the Italian Institutional Banks

Transaction names begin with three small letters shown to the left of the line indicating the nature of the transaction followed by a capital E for receipts (Entrate) or U for payments (Uscite), followed by a small letter indicating the institutional sector. Balance lines and GDP components have names with three capital letters followed by a small letter indicating the institutional sector. Since the variable names abbreviate the Italian names of the transactions, it seemed to make the table easier to use, even for the reader who has not studied Italian, to leave the transaction descriptions in Italian.

Account 1. Production

	Entrate (Receipts)		Società s	Famiglie f	Credito c	Assicura a	AmminPub p	SerFinImp b	Import i	Tot Intern t	RdM r	Totale
pbsE	Produzione di beni e servizi		1149102	1147242	47067	13638	16041	0	0	2373090	0	2373090
pnvE	Produzione di servizi non vendibili		0	0	0	0	276206	0	0	276206	0	276206
sfiE	Produzione dei servizi finanziari imputati		0	0	70465	8766	0	0	0	79231	0	79231
iiiE	IVA e imposte indirette sulle importazioni		0	0	0	0	0	0	93271	93271	0	93271
	TOTALE	A	1149102	1147242	117532	22404	292247	0	93271	2821798	0	2821798
	Uscite (Payments)		Societa	Famiglie	Credito	Assic	AdminPub	SerFinImp	Importe	Totale		
coiU	Consumi intermedi		616857	432306	39664	12588	81038	79231	0	1261684	0	1261684
PIL	PRODOTTO INTERNO LORDO	A	532245	714936	77868	9816	211209	-79231	93271	1560114	0	1560114
ammU	Ammortamenti		72904	107675	3268	578	7256	0	0	191681	0	191681
PIN	PRODOTTO INTERNO NETTO	A	459341	607261	74600	9238	203953	-79231	93271	1368433	0	1368433
	Totale a pareggio	A	1149102	1147242	117532	22404	292247	0	93271	2821798	0	2821798

Account 2. Distribution of GDP

	Entrate		Società	Famiglie	Credito	Assicura	AmminPub	SerFinImp	Importe	Tot Intern	RdM	Totale
PIL	PRODOTTO INTERNO LORDO pm	A	532245	714936	77868	9816	211209	-79231	93271	1560114	0	1560114
copE	Contirbuti alla produzione		31062	11960	2	0	0	0	0	43024	0	43024
	TOTALE	A	563307	726896	77870	9816	211209	-79231	93271	1603138	0	1603138
	Uscite		Società	Famiglie	Credito	Assicura	AmminPub	SerFinImp	Importe	Tot Intern	RdM	Totale
rldU	Redditi da lavoro dipendente		283986	163404	39400	4408	195965	0	0	687163	0	687163
iipU	Imposte indirette sulla prod. e sulle importazioni		65888	26094	5056	4698	3949	0	93271	198956	0	198956
	TOTALE	A	349874	189498	44456	9106	199914	0	93271	886119	0	886119
RLG	RISULTATO LORDO DI GESTIONE	A	213433	537398	33414	710	11295	-79231	0	717019	0	717019
ammU	Ammortamenti	A	72904	107675	3268	578	7256	0	0	191681	0	191681
RNG	RISULTATO NETTO DI GESTIONIE	A	140529	429723	30146	132	4039	-79231	0	525338	0	525338
	TOTALE A PAREGGIO	A	563307	726896	77870	9816	211209	-79231	93271	1603138	0	1603138

Account 3. Income and current operations with the Rest of the World

	Entrate		Società	Famiglie	Credito	Assicura	AmminPub	SerFinImp	Import	Tot Intern	RdM	Totale
RLG	Risultato lordo di gestione	A	213433	537398	33414	710	11295	-79231	0	717019	0	717019
rldE	Redditi da lavoro dipendente		0	687218	0	0	0	0	0	687218	2270	689488
rpsE	Redditi prelevati dai membri delle società		0	18098	0	0	3	0	0	18101	0	18101
rpfE	Redditi prelevati dai membre delle imprese individuali		0	335337	0	0	0	0	0	335337	0	335337
iipE	Imposte indirette sulla prod. e sulle importazioni		0	0	0	0	186026	0	0	186026	12930	198956
ineE	Interessi effettivi		20433	185285	233846	11507	11848	0	0	462919	53919	516838
iniE	Interessi imputati sulle riserve tecniche di assicurazione		0	2463	0	0	0	0	0	2463	0	2463
terE	Rendite dei terreni e dei beni immateriali		1485	4815	0	0	1400	0	0	7700	553	8253
divE	Dividendi e altri utili distribuiti dalle società		2887	4036	1284	425	50	0	0	8682	11938	20620
pnaE	Premi netti di assicurazione contro i danni		0	0	0	27955	0	0	0	27955	2441	30396
iadE	Indennizzi di assicurazione contro i danni		6355	21129	92	2441	379	0	0	30396	0	30396
irpE	Imposte correnti sul reddito e patrimonio		0	0	0	0	252028	0	0	252028	0	252028
cseE	Contributi sociali effettivi		366	0	0	460	210788	0	0	211614	0	211614
csfE	Contributi sociali figurativi		20252	7729	6274	471	28053	0	0	62779	0	62779
prsE	Prestazioni sociali		0	324655	0	0	0	0	0	324655	5327	329982
ttaE	Trasferimenti correnti tra AA.PP.		0	0	0	0	257494	0	0	257494	0	257494
taiE	Trasferimenti correnti alle ISV		0	6559	0	0	0	0	0	6559	0	6559
aicE	Aiuti internazionali correnti		0	0	0	0	464	0	0	464	7706	8170
trpE	Trasferimenti privati con il RdM		0	932	0	0	0	0	0	932	243	1175
tcdE	Trasferimenti correnti diversi		2384	7796	0	0	32249	0	0	42429	1552	43981
ibs	Importationi di beni e servizi		0	0	0	0	0	0	0	0	289484	289484
cfrE	Consumi finali nel Rdm dei residenti		0	0	0	0	0	0	0	0	20648	20648
	TOTALE	A	267595	2143450	274910	43969	992077	-79231	0	3642770		

	Uscite		Società	Famiglie	Credito	Assicura	AmminPub	SerFinImp	Import	Tot Intern	RdM	Totale
rldU	Redditi da lavoro dipendente		0	0	0	0	0	0	0	0	2325	2325
rpsU	Redditi prelevati dai membri delle società		18101	0	0	0	0	0	0	18101	0	18101
rpfU	Redditi prelevati dai membre delle imprese individuali	A	0	335337	0	0	0	0	0	335337	0	335337
copU	Contibuti alla produzione		0	0	0	0	34504	0	0	34504	8520	43024
ineU	Interessi effettivi		97466	42212	152668	993	191259	0	0	484598	32240	516838
iniU	Interessi imputati sulle riserve tecniche di assicurazione		0	0	0	2463	0	0	0	2463	0	2463
terU	Rendite dei terreni e dei beni immateriali		6071	1886	21	0	67	0	0	8045	208	8253
divU	Dividendi e altri utili distribuiti dalle società		6983	0	5374	0	0	0	0	12357	8263	20620
pnaU	Premi netti di assicurazione contro i danni		6355	20702	412	2441	486	0	0	30396	0	30396
iadU	Indennizzi di assicurazione contro i danni		0	0	0	27955	0	0	0	27955	2441	30396
irpU	Imposte correnti sul reddito e patrimonio		41184	196104	12305	866	1569	0	0	252028	0	252028
cseU	Contributi sociali effettivi		0	211614	0	0	0	0	0	211614	0	211614
csfU	Contributi sociali figurativi		0	62779	0	0	0	0	0	62779	0	62779
prsU	Prestazioni sociali		17691	3138	3519	419	301620	0	0	326387	3595	329982
ttaU	Trasferimenti correnti tra AA.PP.		0	0	0	0	257494	0	0	257494	0	257494
taiU	Trasferimenti correnti alle ISV		0	762	389	0	5263	0	0	6414	145	6559
aicU	Aiuti internationali correnti		0	0	0	0	7706	0	0	7706	464	8170
tprU	Trasferimenti privati con il RdM		0	243	0	0	0	0	0	243	932	1175
tcdU	Trasferimenti correnti diversi		8461	25340	0	0	8268	0	0	42069	1912	43981
ebs	Esportationi di beni e servizi		0	0	0	0	0	0	0	0	333191	333191
cnrU	Consumi in Italia dei non residenti		0	0	0	0	0	0	0	0	32251	32251
sfiU	Produzione dei servizi finanziari imputati (rettifica)		0	0	70465	8766	0	-79231	0	0	0	0
	TOTALE	A	202312	900117	245153	43903	808236	-79231	0	2120490	0	2120490
RLD	REDDITO LORDO DISPONIBILE	A	65283	1243333	29757	66	183841	0	0	1522280	0	1522280
ammU	Ammortamenti	A	72904	107675	3268	578	7256	0	0	191681	0	191681
RND	REDDITO NETTO DISPONIBILE	A	-7621	1135658	26489	-512	176585	0	0	1330599	0	1330599
	Totale a pareggio	A	267595	2143450	274910	43969	992077	-79231	0	3642770	0	3642770

Account 4. Use of income

	Entrate		Società	Famiglie	Credito	Assicura	AmminPub	SerFinImp	Import	Tot Intern	RdM	Totale
RLD	Reddito lordo disponibile	A	65283	1243333	29757	66	183841	0	0	1522280	0	1522280
vfqE	Variazione dei fondi quiescenza		0	9878	0	0	0	0	0	9878	0	9878
	TOTALE	A	65283	1253211	29757	66	183841	0	0	1532158	0	1532158
	Uscite		Società	Famiglie	Credito	Assicura	AmminPub	SerFinImp	Import	Tot Intern	RdM	Totale
vfqU	Variazione dei fondi di quiescenza		2927	4591	1848	512	0	0	0	9878	0	9878
CFN	Consumi finali nazionali		0	965390	0	0	275966	0	0	1241356	0	1241356
	TOTALE	A	2927	969981	1848	512	275966	0	0	1251234	0	1251234
RIL	RISPARMIO LORDO	A	62356	283230	27909	-446	-92125	0	0	280924	0	280924
ammU	Ammortamenti	A	72904	107675	3268	578	7256	0	0	191681	0	191681
RIN	RISPARMIO NETTO	A	-10548	175555	24641	-1024	-99381	0	0	89243	0	89243
	Totale a pareggio	A	65283	1253211	29757	66	183841	0	0	1532158	0	1532158

Account 5. Capital Formation

	Entrate		Società	Famiglie	Credito	Assicura	AmminPub	SerFinImp	Import	Tot Intern	RdM	Totale
RIL	Risparmio lordo	A	62356	283230	27909	-446	-92125	0	0	280924	0	280924
caiE	Contributi agli investimenti		14038	6653	0	0	23228	0	0	43919	897	44816
iccE	Imposte in conto capitale		0	0	0	0	11018	0	0	11018	0	11018
tccE	Altri trasferimenti in conto capitale		7274	54	2000	50	1040	0	0	10418	0	10418
	TOTALE	A	83668	289937	29909	-396	-56839	0	0	346279	0	346279
	Uscite		Società	Famiglie	Credito	Assicura	AmminPub	SerFinImp	Import	Tot Intern	RdM	Totale
IFL	Investimenti fissi lordi		106766	131075	3009	900	41161	0	-16284	266627	0	266627
VDS	Variazione delle scorte		-2335	-844	0	0	0	0	0	-3179	0	-3179
antU	Acquisti netti dei terreni		276	-320	2	0	42	0	0	0	0	0
aniU	Acquisti netti di beni immateriali		2049	-668	0	0	0	0	0	1381	-1381	0
caiU	Contributi agli investimenti		0	0	0	0	40825	0	0	40825	3991	44816
iccU	Imposte in conto capitale		4177	6488	235	118	0	0	0	11018	0	11018
tccU	Altri trasferimenti in conto capitale		181	300	559	0	9378	0	0	10418	0	10418
	TOTALE	A	111114	136031	3805	1003	91406	0	-16284	327075	0	327075
ACC	ACCREDITAMENTO o INDEBITAMENTO (-)	A	-27446	153906	26104	-1399	-148245	0	16284	19204	-19204	0