New Tax Capabilities and Medical Accounting in LIFT

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In this paper we review the changes that have been made to the LIFT model in support of our work on Task 3 of contract 500-93-0007. In Task 3, we were asked to add several capabilities to the model. Specifically, we have:

- Added 2 types of taxes, including a payroll tax, a tax on value-added, and changed the programming so that adding another tax could be accomplished easily and quickly.

- Added accounting to track consumer health care spending (NIPA definitions) by source of funds. Specifically, LIFT will now report on the breakdown of the source of funds by Medicare, Medicaid, Other State and local spending, private insurance, and all else.

New Tax Capabilities in LIFT

LIFT now has the capacity to simulate the effects of two additional taxes: a tax on value-and a payroll tax. In addition, the programming of LIFT has been changed so that other types of taxes can easily be inserted into the model. While additional taxes cannot be inserted directly by the user, the reprogramming has considerably reduced the time necessary to add a single new tax to the model.

Value-added Taxes

Taxes on value-added are imposed by value-added category industry (51 sector disaggregation). Two new industry variables have been defined.

VXR	--	Value-added tax rate for each industry.
VTX	--	Value-added tax payments for each industry.

Typically, the user will supply a VXR rate for each industry. The rate is multiplied by the total value added for each industry to arrive at total value-added tax payments. The user can specify a separate VXR for each industry. Group or whole column fixes can be applied to either the tax rate. Specifying a group fix on the tax rate variable (VXR) will cause each of the industries defined in the group (or the whole column) to have the same tax rate. The revenue from the value-added tax goes into the general revenue of the Federal government. The fixes for setting up a value-added tax are inserted in the PFIXES.DAT file, and introduced to the model by running the PFXRED program. A discussion of value-added taxation in LIFT is provided in the accompanying paper by Carr (1994).

The following example shows how to put a 5 percent VAT on all private industries in the PFIXES.DAT file. The fix begins in 1994. Rates are expressed as percentages, i.e. 5 is a 5 percent tax.

```
VXR  AK  -3   94 5.0 110 5.0
  39   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19
  20  21  22  23  24  25  26  27  28  30  31  32  33  34  35  36  37  38  46  51
```

Payroll Taxes

New payroll taxes are also imposed on industries at the value-added category level (51 sector disaggregation). Two new variables have been defined for each industry:

OXR	--	Payroll tax rate for each industry
OTX	--	Payroll tax payments for each industry

Typically, the user will supply an OXR rate for each industry. The rate is multiplied by the total value of wages and salaries for each industry to arrive at total payroll tax payments. The user can specify a different OXR for each industry. Group or whole column fixes can be applied to the tax rate. Specifying a group fix on the tax rate variable (OXR) will cause each of the industries defined in the group (or the whole column) to have the same tax rate. The revenue from this payroll tax goes into the general revenue of the Federal government. The fixes for setting up a payroll tax are inserted in the PFIXES.DAT file, and introduced to the model by running the PFXRED program.

The following example shows how to put a 5 percent payroll tax on all private industries in the PFIXES.DAT file. The fix begins in 1994. Rates are expressed as percentages, i.e. 5 is a 5 percent tax.

```
OXR  AK  -3   94 5.0 110 5.0
  39   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19
  20  21  22  23  24  25  26  27  28  30  31  32  33  34  35  36  37  38  46  51
```

The payroll taxes discussed here are separate from the currently existing payroll taxes. For example, contributions to Federal social insurance funds are financed through payroll taxes and were already programmed in LIFT. The new payroll tax capability refers to any new payroll taxes developed outside of the current social insurance funding system.

Accounting for Health Spending in LIFT

LIFT was constructed primarily using National Income and Product Account (NIPA) data, and we largely adhere to that data structure. For example, total health spending in LIFT is calculated on a NIPA basis; it is the sum of spending on LIFT consumer spending sectors 15, 31, 64, 65, 66, and 80. NIPA data conventions are somewhat different from other conventions, like NHE. For example, NIPA consumer spending does not include direct care provided at military hospitals, Veteran's hospitals, or via public health services. These are accounted for in defense purchases, nondefense purchases, and state and local health purchases, respectively.

At the same time, the NIPA consumer spending on health includes care provided to military personnel and their dependents, veterans, and others if the care is provided at private for-profit hospitals, not-for-profit hospitals, and state and local government hospitals through some transfer payment program (like Medicare).

Notwithstanding the definitional differences between the NIPA and other health data schemes, like NHE, we have attempted to accounts for consumer spending on health by method of financing. Consumer spending on health is divided into spending financed by the Federal government (Medicare), State and local government (Medicaid), and private health insurance benefits. A residual accounts for all other sources of funding consumer health care spending. These may include third-party payments from:

- Miscellaneous Federal government programs
- State and local governments (example: workman's compensation)
- Charitable organizations, in-plant health services, non-patient revenue sources of hospitals, and nursing homes.
- Out-of-pocket consumer spending.

Federal Medical Transfers

LIFT's model of federal medical transfers is very simple. The principal medical transfer variable is Medicare expenditures (LIFT variable TRPHMI). Benefits from hospital and medical insurance in LIFT are computed per person over age 65 (LIFT variable GPOP8), in constant 1977 $. A default equation has these per-recipient-population benefits (LIFT variable TRCHMI) rising with a time trend. This variable can be fixed by the model user.

TRCHMI = -1.476 + 0.032 * TIME
TRPHMI = TRCHMI * GPOP8 * PCE Hospital Deflator (PCE Sector 66)

The federal government also provides funds to the state-administered Medicaid programs through Federal grants-in-aid. Previous versions of LIFT had a single category for federal grants-in-aid. As part of this task, we split federal grants-in-aid into medical (GIAMED) and nonmedical components (GIAOTH). Total grants-in-aid and Medicaid grants-in-aid were directly observable in the NIPA. The nonmedical component was determined as a residual. Constant dollar analogues of the grants-in-aid categories were also calculated: medical (GIAMDC) and nonmedical (GIAOTC). We used the overall consumer price deflator to deflate the grants-in-aid categories.

NIPA data for medical grants-in-aid were not available after 1989. We updated federal Medicaid spending (GIAMED) from the HCFA National Health Expenditures 1991. HCFA's federal Medicaid totals do not match NIPA totals in 1989 or 1985, however, HCFA seems to be about 94 percent of NIPA. We moved NIPA data forward by assuming a 1.06 percent markup over the available HCFA figures.

Federal Medicaid (HCFA) 1990 = 40.7 * 1.06 = 43.3 (Estimate NIPA)
Federal Medicaid (HCFA) 1991 = 53.5 * 1.06 = 56.7 (Estimate NIPA)

To forecast the medical grants-in-aid category, we developed the following regression relating grants-in-aid to the outlays for state and local direct medical relief (the Medicaid program).

```
:                          Federal GIA for Medicaid
  SEE   =       0.46 RSQ   = 0.9989 RHO =   0.20 Obser  =   27 from 1965.000
  SEE+1 =       0.46 RBSQ  = 0.9989 DW  =   1.61 DoFree =   26 to   1991.000
  MAPE  =       4.89
    Variable name           Reg-Coef  Mexval t-value  Elas   NorRes     Mean
  0 Fed. GIA (medical)    - - - - - - - - - - - - - - - - - - - - - -     15.30
  1 S&L medical dir. relief  0.56690  4381.5 228.458   1.00    1.00     27.07
```

In the forecast, total federal grants-in-aid (GIA) are derived as the sum of GIAMED and GIAOTH. The user can modify or exogenously specify the following variables.

Real Federal Grants-in-aid medical	GIAMDC
Real Federal Grants-in-aid nonmedical	GIAOTC.

For non-medical grants-in-aid, the constant dollar value of grants-in-aid is exogenous, and the current dollar value is obtained by multiplying by the PCE deflator.

It is important to note that changing federal grants-in-aid alone will not alter the amount of public funding of the medical sector. Increasing GIAMDC, for example, will not lead to an increase of state and local direct relief (medical), it will only alter the share of the spending that is accounted for by the federal government. Changing the share of total Medicaid spending accounted for by the federal government will change the federal deficit, and will have an impact on other parts of LIFT.

State and Local Medical Transfers

Previous versions of LIFT did not separate medical from nonmedical state and local transfers. In the current version, state and local medical transfers are the amount of state and local direct relief (medical) available in the NIPA (LIFT variable SLMEDR). This represents the Medicaid program. We derived nonmedical state and local direct relief by subtracting medical direct relief from total direct relief.

To forecast state and local outlays for direct medical relief, we developed the following regression equation. The equation relies mostly on the percentage of the total population that is either very young or very old.

```
:                          State Medical Direct Relief
  SEE   =       0.12 RSQ   = 0.8316 RHO =   0.63 Obser  =   17 from 1975.000
  SEE+1 =       0.10 RBSQ  = 0.7927 DW  =   0.75 DoFree =   13 to   1991.000
  MAPE  =       5.85
    Variable name           Reg-Coef  Mexval t-value  Elas   NorRes     Mean
  0 slshr                - - - - - - - - - - - - - - - - - - - - -      1.45
  1 intercept             -16.01818    67.0  -4.821 -11.06    5.94      1.00
  2 (gpop1+gpop2)*100/pt    0.31823    51.2   4.091   4.94    4.25     22.46
  3 gpop8*100/pt            0.86083   102.7   6.359   6.92    1.15     11.64
  4 un                      0.04254     7.3   1.398   0.20    1.00      6.94

      where

   gpop1 =  Population aged 0-5
   gpop2 =  Population aged 5-15
   gpop8 =  Population aged 65 and over
   un    =  Civilian unemployment rate
   slshr =  State and local direct relief (Medicaid) as a percent of disposable income.
```

To forecast the nonmedical state and local direct relief (SLOTDR), we developed an equation that depends on the percentage of the population less than 16 years old, real, per-capita income, and the unemployment rate. Most of this category are payments under the Aid to Families with Dependent Children Program.

```
:                       Real State Direct Relief (Other)
  SEE   =       1.01 RSQ   = 0.6623 RHO =   0.08 Obser  =   17 from 1975.000
  SEE+1 =       1.02 RBSQ  = 0.5843 DW  =   1.84 DoFree =   13 to   1991.000
  MAPE  =       2.06
    Variable name           Reg-Coef  Mexval t-value  Elas   NorRes     Mean
  0 slo                  - - - - - - - - - - - - - - - - - - - - -     42.40
  1 intercept             -27.11254     5.5  -1.209  -0.64    2.96      1.00
  2 Real, percap disp. inc.  0.00313    13.5   1.933   0.37    2.11   5023.20
  3 (gpop1+gpop2)*100/pt     2.29146    44.3   3.753   1.21    1.09     22.46
  4 un                       0.33427     4.6   1.110   0.05    1.00      6.94

      where

   slo   =  Real per-capita nonmedical direct relief payments
   gpop1 =  Population aged 0-5
   gpop2 =  Population aged 5-15
   pt    =  Total population
   un    =  Civilian unemployment rate
```

Total State and local direct relief is forecast as the sum of the medical and nonmedical components (SLTDR=SLMEDR+SLOTDR).

Private Insurance Benefits

Private insurance benefits are calculated from employer-paid premiums for health insurance (LIFT variable VHTH, taken from NIPA). We took total private insurance premiums from the National Health Expenditure database (1992 Trustee's Report), and found that the ratio of total private insurance premiums to employer-paid insurance premiums has lately averaged about 119 percent. We use 19 percent of employer-paid insurance premiums as the amount of employee-paid (and other personal) premiums on a NIPA basis. Subtracting LIFT PCE sector 67 (net health insurance premiums) from total premiums, we calculate the total amount of health insurance benefits paid. The 19 percent ratio of employee-paid insurance premiums to employer-paid insurance premiums can be altered by the user (LIFT variable RPRVHT).

Residual Sources, Including Out-of-pocket

LIFT variable PAYHTH is a residual that accounts for several sources of funding. The major portion of this variable is out-of-pocket consumer spending. The variables and equations listed below summarize LIFT's treatment of sources of funding for consumer health spending.

Variables Used in the Calculations

Nominal consumer spending on health	PCEHTH
Federal medicare spending	TRPHMI
State and local direct medical relief	SLMEDR
Employer-paid premiums for health insurance	VHTH
Employee-paid (+ other pers). prems for health insurance	PRVHTH
Ratio of employee premiums to employer premiums	RPRVHT
Health insurance premiums	HIPREM
Health insurance benefits	HIBENS

Equations

```
PCEHTH =  PCE(15)+PCE(31)+PCE(64)+PCE(65)+PCE(66)+PCE(80)
HIPREM =  PRVHTH + VHTH
PRVHTH =  (1 + RPRVHT) * VHTH
HIBENS =  HIPREM - Nominal PCE(67)
PAYHTH =  PCEHTH - (TRPHMI+SLMEDR+HIBENS)
```