GEMPACK USER DOCUMENTATION

Release 7.0

GPD-7

Installing and Using
the Executable-Image Version of GEMPACK
on DOS/Windows PCs

Installing and Using the Executable-Image Version of GEMPACK on DOS/Windows PCs

GEMPACK Document No. GPD-7

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This is part of the documentation of the GEMPACK Software System for solving large economic models, developed by the IMPACT Project, Monash University, Clayton Vic 3800, Australia.

Abstract

DOS/Windows PC computers provide excellent platforms for doing serious general equilibrium modelling. This document describes how to install and use the Executable-Image Version of GEMPACK on a DOS/Windows PC. This document also describes how to install the GEMPACK Windows programs including ViewHAR, ViewSOL, RunGEM, TABmate and AnalyseGE and the electronic version of the GEMPACK documentation.

The Executable-Image Version allows the full range of modelling tasks (building new models or modifying existing models). Normally models are limited to those that can be implemented and solved within about 16-32 megabytes of memory. This is large enough for many medium-sized models but not sufficient for large models.

Authors and Earlier Editions

Date	*Author(s)*	*Comment*
July 94	J.Harrison & K.Pearson	First edition (GPD-7) (Release 5.1)
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CHAPTER 1

1. The Executable-Image Version of GEMPACK

GEMPACK runs essentially unchanged on a variety of machines. This document tells you how to install the Executable-Image Version of GEMPACK on a PC (usually a Pentium) running Windows 95, 98, NT or 2000[1].

This document describes

1. how to install and use the Executable-Image version of GEMPACK,
2. how to install and use WinGEM, the Windows interface to GEMPACK, and associated Windows programs, including ViewHAR, ViewSOL, RunGEM and TABmate**,**
3. how to install the program AnalyseGE, and
4. how to install electronic versions of the GEMPACK documentation.

The Executable-Image version of GEMPACK can be used to build new models or modify existing models. Normally models are limited to those which can be implemented and solved within about 16-20 megabytes of memory (even when the computer on which the software is installed has more than this amount of memory).[2] This includes many medium-sized models, but excludes large models such as ORANI or MONASH at the usual disaggregation of 100 or more sectors and many intertemporal models. Precise details of the size of models that can be handled are given in section 6.2.1 below.

The user documentation for GEMPACK can be found in the other GEMPACK documents, of which GPD-1[3] *Introduction to GEMPACK* should be your starting point. You can carry out the installation and testing described below without being familiar with GEMPACK. But if you intend to use GEMPACK for modelling, we recommend you at least quickly read Chapters 1 to 3 in GPD-1 before attempting any modelling on your PC (and perhaps before you install GEMPACK on your PC).

An introduction to the different GEMPACK programs can be found in section 1.1 of GPD-1, while a guide to the models supplied with GEMPACK (including the Executable-Image version) is given in section 1.3 of GPD-1. A guide to the full user documentation for GEMPACK can be found in chapter 5 of GPD-1. Hands-on examples for GEMPACK can be found in GPD-8.

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[1] For Release 7.0, the Executable image version will no longer run on Windows 3.1 computers because all executables are 32-bit images not 16-bit as needed for Windows 3.1.

[2] These limits do not apply if you have an Unlimited Executable-Image GEMPACK licence (see section 1.2 of GPD-1).

[3] References to GEMPACK documents identify the document by GEMPACK Document (GPD) number, rather than by author or date. References are always to the version of the document which is current at the date of issue of the cross-referencing document. The GEMPACK documents referenced are listed in a separate section at the end of the References section of this document. Comments from readers on this or any of the GEMPACK documents, either pointing out errors, inaccuracies, omissions or obscurities, or making other suggestions for improvements, will be welcomed. Please address such comments to one of the authors at the Impact Project.

1.1 GEMPACK Programs Supplied with the Executable-Image Version

The GEMPACK programs included with the Executable-Image Version of GEMPACK are:

TABLO	for processing the description of your model
GEMSIM	for carrying out simulations with your model
GEMPIE	for printing simulation results
SAGEM	for carrying out Johansen simulations
MODHAR	for building or modifying data files
SEEHAR	for looking at data files
SLTOHT	for converting simulation results to other forms
MKHAR	for moving data files between different computers
RWHAR	for moving data files between different computers
SUMEQ	for obtaining information about Equations files
SEENV	for obtaining information about Environment files
CMPHAR	for comparing data on two Header Array files
ACCUM	for side-joining solutions for spreadsheet programs
DEVIA	for preparing deviations between solutions for spreadsheets
RWSOL	for moving Solution files between different computers
MKSOL	for moving Solution files between different computers
CMBHAR	for combining Header Array files
TEXTBI	for recovering text files from binary files

There are also the Windows programs:

ViewHAR	for viewing and modifying your data files
ViewSOL	for viewing your Solution files
WinGEM	the Windows shell for GEMPACK
RunGEM	for running simulations on an established model, and for sensitivity analysis
TABmate	for modifying TABLO Input files
AnalyseGE	for analysing simulation results

Other programs can be obtained from the GEMPACK Web site:

http://www.monash.edu.au/policy/gempack.htm

1.2 Models Supplied with the Executable-Image Version

All the models usually supplied with source-code version of GEMPACK are supplied with the Executable-Image Version of GEMPACK. The models currently supplied are those listed in chapter 1 of GPD-8.

The models currently supplied include Stylized Johansen, Miniature ORANI, TRADMOD, ORANIG, ORANI-F, GTAP, DMR, TREES, CRTS and 5SECT. These can all be solved in 16 megabytes of memory.

1.3 Current Release

The current version of GEMPACK is Release 7.0 (October 2000).

1.4 Contacting the Centre of Policy Studies / Impact Project

For more information about GEMPACK, contact

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Information can be obtained from the GEMPACK Web site:

http://www.monash.edu.au/policy/gempack.htm

CHAPTER 2

2. System Requirements for the Executable-Image Version

2.1 Summary

1. A pentium computer, or similar Windows PC[4].
2. Windows 95, Windows 98, Windows NT or Windows 2000.
3. Hard disk, requiring at least 30 MB free to install and test GEMPACK.
4. At least 16 MB of memory (RAM) or 32MB of memory for Windows NT or 2000.

If your computer easily satisfies the above requirements, you can omit the next section and go on to chapter 3.

2.2 Disk Space Free

You can determine how much disk space is free by:

1. in Windows, right click on the icon for your hard drive in "My Computer" or
2. in a DOS box, entering the DOS command: **dir**
   The number of bytes free is shown on the screen at the end of the output. (1Mb is about a million bytes, so you will need about 30,000,000 bytes free to install, test and use GEMPACK.)

Implementing your own models takes more disk space. The larger the model, the more space you will need.

2.3 Memory Required

The amount of extended memory you have limits the size of models you can build. Our experience is that many models that are being built now can be implemented with 16 MB of RAM and most can be implemented in 32MB of RAM (although more is required to implement very large models such as ORANI and its extensions, or large intertemporal models). Windows NT and Windows 2000 need about 16 Mb more memory than Windows 95 and 98.

Click on **Help | About** in the main menu of **My Computer**. This will tell you how much physical memory is available to Windows.

[4] You can also use an 80486 DX machine, or an 80486 SX machine with a coprocessor (80487 SX).

CHAPTER 3

3. Installation Instructions

The Executable-Image Version of GEMPACK is supplied on a CD. If you do not have a CD drive on your computer, see chapter 7.

The components to install are:

- the Executable-image version of GEMPACK.

  This involves copying executable images of the different GEMPACK programs (as listed in section 1.1) from the CD or disks to the hard disk of your computer. These are the programs you use to solve and modify models.

- Files from the licence (and fix) diskette. Your GEMPACK licence is usually supplied on a 1.44 Mb floppy disk. Select this option to copy your licence file to the directory in which the Executable-Image files are installed.

- WinGEM — the Windows interface to GEMPACK.
  ViewHAR — used to view data on GEMPACK Header Array files.
  ViewSOL — used for viewing Solution files (results of simulations).
  GemEdit — a text editor used by WinGEM.
  RunGEM — for carrying out simulations with models and for doing sensitivity analysis.
  TABmate — a text editor for modifying and debugging TABLO Input files.

- electronic versions of the GEMPACK user documentation.
  You can read or print this GEMPACK documentation using the Adobe Acrobat Reader (which you can also install from the Executable-Image CD if it is not already installed on your computer).

- AnalyseGE — the Windows program for analysing simulation results.

3.1 If You Have An Earlier Release of GEMPACK Installed

If you have an earlier release of GEMPACK installed on your machine, you may prefer to move it before installing Release 7.0, or else to install Release 7.0 in a different directory. Indeed, it is probably best (if you have enough disk space) to leave the earlier version on the disk until you have successfully installed and tested Release 7.0 (in case an unexpected problem occurs).

If you decide to move the existing version before installing Release 7.0, you can use the *Windows Explorer* or *My Computer* to change the name of the directory. Alternatively, if you prefer to work under DOS, you can use the RENDIR command if it is available on your PC.

3.2 Installing from the GEMPACK Executable-Image CD

The Executable-Image Version of GEMPACK is supplied on a CD. If you do not have a CD drive on your computer, please see chapter 7.

Insert the CD into your CD drive. Then select from the **Start Menu**

Run...

and enter in the RUN box,

e:\install.exe (Replace **e:** by the drive letter for your CD – for example, **f:\install.exe**)

After this just follow the install procedure. If you are not sure, read the information below which gives a few more details.

Selecting What to Install

You are first asked to select which components you wish to install. You can select some or all of

- GEMPACK Executable-image files
- Files from Executable-image licence (and fix) diskette
- Windows GEMPACK files (WinGEM etc)
- GEMPACK documentation (PDF files)
- AnalyseGE

Click in the check boxes to indicate which you want to install, then click on **Ok**.

If you have been provided with a new GEMPACK licence, it will be supplied on a disk (not on the CD). If you have checked the first item above, you should also check the second item above so that your new licence is copied to your computer as part of the installation procedure.

If the letter sent with your CD indicates that there is a bug fix disk included, you should check the first two items above so that these bug fixes are incorporated into the version of GEMPACK you install.

Selecting the GEMPACK directory

Then you are asked to indicate the folder (another name for "directory") in which to install the relevant components. The default is the directory **C:\GP**. We suggest that you install in this default directory unless you have another version of GEMPACK already there. In that case, perhaps choose directory **C:\GP70**. However you can choose any directory you please. Click on the **Browse** button to choose another directory. The directory need not exist since the installer will create it for you. Indeed it may be best to choose a directory that does not already exist since, otherwise, the installation procedure may overwrite existing files. After selecting the directory click on **Ok** . **(**When you return to the original screen check carefully that the directory name is what you want. Sometimes the install program adds \GP to the end of the name you have selected.)

Below we refer to this directory, where you are installing GEMPACK, as the **GEMPACK directory**. [Click on **Next** once you have indicated the directory.]

Changes to AUTOEXEC.BAT

Then you will be asked if you wish the Install program to make relevant changes to your AUTOEXEC.BAT file. Details about these can be found in section 3.3 below. We recommend that you respond **yes** if you are installing Executable-image of GEMPACK in a new directory, but recommend that you respond **no** if you are installing GEMPACK in the same directory which contained an earlier version of GEMPACK. Under Windows NT or 2000, you may like to do these changes in a different way by changing the Environment page of the Systems properties to add the

GEMPACK directory to your path and set a new Environment variable GPDIR to point to the GEMPACK directory (see section 3.3.2). Say **no** in this case.

The Install program then begins to install the components you have selected. These are done in the following order.

- Windows GEMPACK files (WinGEM etc) [if selected]
- AnalyseGE [if selected]
- GEMPACK documentation (PDF files) [if selected]
- GEMPACK Executable-Image files [if selected]
- Files from Executable-image licence (and fix) diskette [if selected]

3.2.1 Installing WinGEM and Windows Programs

You will be told when the installation of WinGEM and the associated Windows programs starts. The installer will give you a choice as to which of the Windows GEMPACK programs to install. In general you should install all of the programs.

It takes the installer only a few seconds to copy the relevant files into the directory you have chosen. The installer also creates icons for the various programs (WinGEM, ViewHAR, ViewSOL, RunGEM, GemEdit and TABmate) on your desktop.

The destination folder should usually be the GEMPACK directory previously selected.

3.2.2 Installing AnalyseGE

You will be told when the installation of AnalyseGE starts,

We recommend that you install AnalyseGE in your GEMPACK directory but you can use a different directory if you wish. (Note that the name of the EXE file for AnalyseGE is ANALYSGE.EXE.) The installer will create an icon for it on your desktop.[5]

3.2.3 Installing the GEMPACK Documentation

You will be told when the installation of the GEMPACK documentation starts. Again it takes the installer only a few seconds to copy the relevant files into the directory you have chosen. The electronic versions of the GEMPACK documentation installed are so-called **PDF files**.[6] These can be viewed or printed with the **Adobe Acrobat Reader**. The installer asks if you want this Acrobat Reader installed. We recommend that you only say **Install** if you do not have any version of this Reader on your PC (otherwise say **Cancel**).

If you choose to install the Adobe Acrobat Reader, the Adobe installer will be run. The installer may take a minute or so to check your computer before beginning the installation. If the Adobe installer suggests rebooting your computer, we suggest that you say **no** so that you complete the other installations first.

---

[5] See section 2.4 of GPD-4 for further details about AnalyseGE. See chapter 6 of GPD-8 for examples of how to use AnalyseGE.

[6] PDF is an abbreviation for “Portable Document Format”.

3.2.4 Copying the Executable-Image Files

The installation of the GEMPACK Executable-Image (the installing of the GEMPACK programs listed in section 1.1) is done next. You will be told when this part of the installation starts.

3.2.5 GEMPACK Licence/Fix Disk

If you have selected this as part of the installation of the Executable-Image files, you will be asked to insert the licence fix disk in your floppy drive and to select the name of the drive (usually **a:**, but you can change it to **b:** if necessary.) [It will probably take a little longer to copy the licence file from the floppy disk than it took to copy the Executable-image files from the CD.]

3.3 After A Successful Install, Fix the PATH and GPDIR

For GEMPACK to run easily, you must make sure that the GEMPACK directory (usually C:\GP) is on your DOS path, and that the Environment variable GPDIR is set to the GEMPACK directory.

If you allowed the installer to make changes to AUTOEXEC.BAT, you just need to **restart your computer** now. This completes the installation of GEMPACK. Once your computer restarts, you can go on to go to chapter 4 below to test the installation.

If you did not allow the installer to make changes to AUTOEXEC.BAT, you must make the required changes yourself as described in the next section 3.3.1 or (if you are using Windows NT or 2000) in section 3.3.2.

3.3.1 PATH and GPDIR Changes in AUTOEXEC.BAT

If you are using Windows NT or 2000, an alternative method is described in section 3.3.2.

If you prefer to make changes to AUTOEXEC.BAT yourself, AUTOEXEC.BAT is a text file in the directory C:\ of your computer. You must edit it in a text editor.

The important changes to AUTOEXEC.BAT are that

- the directory into which you installed GEMPACK must be on your DOS path.
- if this directory is not C:\GP, the DOS environment variable GPDIR must be set equal to this directory.

Once you have made these changes, you must **restart your computer** before proceeding. Examples of these changes are given in sections 3.3.1.1 and 3.3.2.

3.3.1.1 Example of Changing PATH and GPDIR in AUTOEXEC.BAT

You have installed GEMPACK in a directory on your hard disk. The default directory name for the GEMPACK directory is **C:\GP.** However you may have chosen some other directory name in section 3.2 above. For this example we will assume you have used C:\GP70.

If you have not allowed the installer to make changes to your AUTOEXEC.BAT, you must edit the appropriate file (called AUTOEXEC.BAT in your default directory C:\) which is executed when you turn on your PC. (If you have no such file, create one.) You should add these directories to the PATH line in that file. (Use a text editor, such as the editor EDIT which comes with DOS or GEMEdit the GEMPACK text editor.)

For example, if you find a line

```
PATH = C:\;C:\WINDOWS
```

you should change it to

```
PATH=C:\;C:\WINDOWS;C:\GP70;
```

If you do not find a PATH line, make a new line

```
PATH=C:\GP70;
```

(If you installed GEMPACK on a disk drive different from C:, specify that one in the PATH line.) Do not leave any spaces in the PATH line.

If you installed the GEMPACK files in directory C:\GP, no other change is required to AUTOEXEC.BAT. But if you installed these files in another directory, you need to add an extra line to AUTOEXEC.BAT. For example, if you installed the GEMPACK files in directory C:\GP70, add the following line:

SET GPDIR=C:\GP70

(Change this appropriately to indicate where you actually installed these files.) Note that it is important not to include any spaces in this line, apart from the one between SET and GPDIR.

3.3.2 PATH and GPDIR for Windows NT or 2000

If you are using Windows NT or 2000, there is an alternative method to change the path and set the Environment variable GPDIR. This has the advantage that you do not need to reboot your computer afterwards. Select ***Start | Settings | Control Panel | System.***

In the System Properties book, select the page marked ***Environment.***

1. Select the *Path* variable and add the GEMPACK directory to it (separated by a semicolon ;). Click on the *Set* button to accept this change.
2. Set a new Environment variable named GPDIR and give it a value C:\GP (or whatever your GEMPACK directory is called.) Select the *Set* button to accept this change. Click on the *Ok* button to accept these changes to the Environment.

Test these changes by opening a new DOS box and entering "SET". This should show the altered path and the new Environment variable GPDIR.

3.3.3 Reboot if Necessary

Finally **reboot** your computer to bring these changes to your path and the variable GPDIR into effect.

3.4 Copying the GEMPACK Licence File

If your GEMPACK licence file has been sent on a floppy disk (the licence/fix disk accompanying the CD), the installation procedure should have copied a file called LICEN.GEM from the floppy disk to the GEMPACK directory. If not, copy LICEN.GEM to this GEMPACK directory.

If you already have the licence on your computer in another directory, please copy the file LICEN.GEM to this current GEMPACK directory.

Please see section 1.2 of GEMPACK document GPD-1 for details about GEMPACK licences for Release 7.0.

Release 7.0 licences are different from Release 6.0 licences but can be used with Release 6.0 or 5.2 programs.

3.5 Text Editor

When installing and using GEMPACK, you will need to be able to edit text files. This is often best done using a text editor (that is, an editor designed for handling text files exclusively). A text editor EDIT is supplied with DOS or Windows. There are many other text editors available on PC machines.

If you installed WinGEM, you can use its associated text editor **GEMEdit**. The text editor **TABmate** can also be used. It is excellent if you are writing or debugging TABLO Input files. It can also be used for other text files.

Alternatively, you can use a word processor (such as Microsoft Word or WordPerfect) to edit text files; if so, you must be careful to save the resulting file as a text file.

3.6 Accessing the CoPS Web Pages from the CD

The GEMPACK CD also contains a snapshot, created in October 2000, of the Centre of Policy Studies (CoPS) Web site at Monash University. It is created as a convenience for those who do not have easy or rapid Internet access. Please be aware that the real Web site may well have been updated since this CD was created. The real web address is *http://www.monash.edu.au/policy/*

To access this snapshot of the web site, you do **not** have to be connected to the Internet. However, you do need a Web Browser, such as Netscape or Internet Explorer. Enter the location:

e:\welcome.htm where "e" is the drive letter of your CD drive.

Links pointing to sites outside the Centre of Policy Studies, and *mailto* links have been preserved, but will only function if you are connected to the Internet.

Self-extracting EXE archives are included for those who do not have a browser or the Acrobat reader. There are 16-bit and 32-bit versions of the Netscape browser in the BROWSERS directory of the CD and of the Acrobat reader in the ACROBAT directory of the CD. In each case copy the EXE to your hard drive and run it to install the program.

Included in the CoPS Web pages are PDF versions of many of the CoPS/Impact Project Working papers which you can read or print out using the Acrobat reader.

CHAPTER 4

4. Testing the Installation

In this chapter we suggest that you test the main features of the installation by carrying out a simulation with the Stylized Johansen model.

If this simulation does not work, you will need to go back to some of the steps in section 3.3 above.

Since most users will work with WinGEM, we first tell you how to carry out the testing via WinGEM.

4.1 Making a Directory for the Stylized Johansen Model

Start WinGEM running, following the procedure described in section 2.1 of GPD-8. Then prepare a directory for the model SJ (Stylized Johansen) and set the working directory, as described in sections 2.1.2 and 2.1.3 of GPD-8.

4.2 Checking the DOS Path and Access to Your GEMPACK Licence

Before carrying out the test simulations, we suggest that you check that your DOS Path has been set correctly and that GEMPACK programs are able to access your GEMPACK licence.

To do this, select

File | Shell to DOS

from the main WinGEM menu. [That is, click on ***File*** and then click on ***Shell to DOS*** from the menu items which drop down.]

This will start a DOS box running. [If the font in the DOS box is too small to read, change the Font size of the System font. Alternatively, use the dropdown box on the left hand side of the Menu bar to an appropriate size, for example 10 x 18.]

In the DOS box, type in the commands

**cd **

tablo

If your DOS settings are set correctly, the GEMPACK program TABLO will start to run and it will find your GEMPACK licence. In this case you will be offered lots of options for the program TABLO.

Stop TABLO running by typing **Control-C** (that is, hold down the Control key, which is usually on the left of your keyboard and may be labelled "Ctrl", and, while holding it down, touch the C key). TABLO should stop running (though you may need to type Control-C twice). Now type

exit

which should close the DOS box. You are now ready to carry out the test simulations, so please skip to the next section.

1) If TABLO does not start running, your DOS Path is not as required. This may mean that you didn't change your AUTOEXEC.BAT file, or perhaps you haven't yet rebooted your computer since you made these changes.
2) If TABLO started running but reported that it could not access your GEMPACK licence, the error message will tell you which licence file the program was trying to access. Please check that your

licence file (it is called LICEN.GEM) is in the directory in which you installed GEMPACK. If the program indicates it is trying to access LICEN.GEM in a directory which is different from the one in which you installed GEMPACK, check the parts of section 3.3.1 which relate to the DOS environment variable GPDIR.

Check that the PATH and GPDIR are correctly set. To do this, first go into a DOS box, and type the DOS command

set

Check that the PATH is as you expect, that is, that it includes the GEMPACK directory (usually C:\GP). If you installed GEMPACK in a directory other than C:\GP, also check that the variable GPDIR has its expected value. If either of these is not as required, read section 3.3 (and check that you rebooted). Only proceed when everything is as required.

If you are unable to diagnose the problems here, please type

exit

(which will close the DOS box) and then click on WinGEM (which should be at the top of your screen). Select

Options | Generate diagnostic file

Select a directory in which to save the diagnostic file (the file will be called **diagnose.txt**). Then please send (via email or fax) this file (it is a text file) to us at the Impact Project. We will endeavour to assist. Details about how to contact the Impact Project are in section 1.4.

4.3 Simulations to Test GEMPACK and WinGEM

To test that GEMPACK and WinGEM are working correctly, we suggest that you carry out the simulations with Stylized Johansen in Examples 2.1.6 to 2.1.8 of Chapter 2 of GPD-8. This carries out the simulations using GEMSIM (see also section 2.5 of GPD-1). Check that the results of the simulation are as expected (see, for example, section 2.7 of GPD-1).

If any of these tests does not work, re-check the steps in the installation in section 3.3 above.

CHAPTER 5

5. Hands-On Computing on the PC

In this chapter we give suggestions for hands-on computing which will help you to become familiar with many important features of the use of GEMPACK on a PC. These are based on the models supplied with GEMPACK (see chapter 1 of GPD-8), especially the Stylized Johansen and Miniature ORANI models.

Note that the files corresponding to the example models sent with GEMPACK are all in the EXAMPLES subdirectory of your GEMPACK directory (usually C:\GP\EXAMPLES).

5.1 Using WinGEM

Detailed suggestions for hands-on computing using WinGEM can be found in chapter 2 "Getting Started with GEMPACK via WinGEM" of GPD-8. This begins with examples based on the Stylized Johansen and goes on to examples based on Miniature ORANI, GTAP and ORANIG. You should ignore the examples there using TABLO-generated programs.

5.2 Not Using WinGEM

Detailed suggestions for hands-on computing using WinGEM can be found in chapter 3 "Unix/DOS Prompt: Hands-on Computing" of GPD-8. This begins with examples based on the Stylized Johansen and goes on to examples based on Miniature ORANI. You should ignore the examples there using TABLO-generated programs.

CHAPTER 6

6. Building Your Own Models

This chapter contains other information relevant to working with GEMPACK on your DOS or Windows machine. Most of it applies whether you are running WinGEM or not (though most of the changes discussed below need to be made in DOS or in a DOS box).

6.1 New Model's Directory Location

We suggest that each new model that you build is put in a separate directory on the hard disk, outside of \GP. Note that your PATH command will ensure that the GEMPACK programs are found correctly when, for example, you (or WinGEM) issue the command

tablo

When you use WinGEM with any model, make sure that you set WinGEM's working directory to point to the directory containing the files for this model (as spelled out in section 2.1.3 of GPD-8).

6.2 If Your Model Becomes Too Large

This may happen because you have exceeded the limits on your Executable-Image licence, or because you have run out of available memory on your computer.

6.2.1 Executable-Image Licence Limits

This subsection applies if you have a Limited Executable-Image GEMPACK licence. It does not apply if you have an Unlimited Executable-Image licence (see section 1.2 of GPD-1).

A limit is imposed on the size of the models you can carry out simulations with using this Executable-Image Version of GEMPACK. The only programs that may end with an error because your model has exceeded these limits are GEMSIM and SAGEM. The limits only apply to simulations. There are no limits imposed on the size of data-manipulation tasks you can carry out with the Executable-Image version of GEMSIM.

We expect that all simulations that could have been carried out with the Release 6.0 Executable-image version of GEMPACK will also be allowed with the Release 7.0 Executable-image version.

The limits on the size of simulations that this Executable-Image version of GEMSIM can solve are:

- Total number of (components of) endogenous variables, including any backsolved for, must be no more than 30,000.
- Total number of (components of) variables (exogenous and endogenous, including any backsolved for) must be no more than 35,000.
- Total number of (components of) endogenous variables in the condensed system must be no more than 10,000.
- Total number of (components of) variables (exogenous and endogenous) in the condensed system must be no more than 16,000.
- Number of nonzeros in the Left-Hand Side (LHS) matrix (for any step of the simulation) must be no more than 75,000.

- Total number of reals and integers used for coefficients (pre-simulation and updated), plus those used to store simulation results, must be no more than 250,000.
- Total number of components of variables (in the condensed system or backsolved of) with one argument[7] and more than 40 components must not be more than 1000. [This condition should only affect single-country models with more than 40 sectors.]

The same limits apply for **SAGEM** simulations as for GEMSIM simulations, namely

- Total number of (components of) endogenous variables in the Equations matrix must be no more than 10,000.
- Total number of (components of) variables (exogenous and endogenous) in the Equations matrix must be no more than 16,000.
- Number of nonzeros in the Left-Hand Side (LHS) matrix (for any step of the simulation) must be no more than 75,000.

All the other programs supplied with this Executable-Image version should be able to handle arbitrarily large tasks, subject only to the amount of memory on your computer.

If a simulation you are carrying out exceeds the limits for the version of GEMSIM supplied with this Executable-Image version of GEMPACK, you will receive a message like the following one.

%% This simulation has exceeded the dimensions allowed with GEMSIM
for your type of Executable-image GEMPACK licence.
To continue you would need a source-code version of GEMPACK
(or an "Unlimited Executable-image" licence, if appropriate for you).
You can obtain these from the GEMPACK distributors.

This will be followed by details telling you by how much your simulation has exceeded the limits specified above.

With the Limited Executable-Image Version, your main alternative is to find another way of carrying out the same task. The only other alternative is to obtain a more powerful version of GEMPACK, either a Source-code version or an Unlimited Executable-image version.

The limits shown above are also the limits for a Release 7.0 TABLO-generated program without any form of GEMPACK licence. If a simulation with a TABLO-generated program exceeds any of these limits, it will require at least an Introductory licence[8] - see section 1.2 of GPD-1.

6.2.2 Not Enough Memory Available on Your Computer

If the task you are carrying out with any of the programs supplied with the Executable-Image version of GEMPACK requires more memory that is available on your computer, you will receive a message saying that the program is stopping because it is

unable to allocate sufficient memory.

[7] Variables with two or more arguments, only one of which ranges over a set of size more than 1, are also included here.

[8] Prior to Release 7.0, an Introductory licence was called a Large-Simulations licence.

If this happens, you may be able to free up more memory by closing down any other applications running (for example, word processors), in which case you can then try to rerun the task. Otherwise you need to find some other way of carrying out the task (or buy more memory).

6.3 Using GEMPACK in a DOS Box

If you prefer to, or need to, work in a DOS box, we strongly suggest that you always work in the DOS box that WinGEM provides via the Menu option:

File | Shell to DOS

The settings of this DOS box have been designed to produce good productivity, especially for GEMPACK users who are running long simulations in a DOS box and simultaneously working with other Windows programs (for example, word processing or spreadsheet programs). In particular, programs running "in the background" in these DOS boxes usually receive a reasonable fraction of total CPU time without disrupting the foreground task.

6.4 Using Stored-input Files in a DOS Box

This section does not apply if you are running WinGEM.

You can use Stored-input files under DOS on a PC either via the GEMPACK **sti** option or using redirection of input as in, for example,

gemsim < sjlb.sti

or using the command line **-sti** feature (see section 4.5 of GPD-1), as in, for example,

gemsim -sti sjlb.sti

[The latter may be more robust under Windows NT and 2000.]

If you make your own Stored-input files to use via input redirection, it is a good idea to include the line

bat

at the start of these files. This means that, if the program encounters invalid input, it will stop. (See section 4.6 of GPD-1.)

6.5 Interrupting Programs and Controlling Screen Output

This section only applies when you are running under DOS or in a DOS box.

6.5.1 Interrupting Programs

Sometimes you will start a program running and then realise that it is not doing what you intend. You can interrupt the program and return to the DOS prompt by typing Control-C (that is, hold down the Control key, which is usually on the left of your keyboard and may be labelled "Ctrl", and, while holding it down, type C). Sometimes you may have to type Control-C twice to achieve this.

6.5.2 Controlling Screen Output

Often screen output goes much too quickly for you to read. You can control it using the

Control-S Control-Q

keystrokes. (For Control-S, hold down the Control key, which is usually on the left of your keyboard and may be labelled "Ctrl", and, while holding it down, type S).

Use Control-S to stop the screen output and Control-Q to start it again. You can repeat these as needed. However, if you get out of step, say by typing two Control-S in a row, you will lose control of the output and have to wait until the program ends; even Control-C (see section 6.5.1 above) will probably fail then.

On some machines the Scroll Lock key works in a similar way. (It first stops screen output, then starts it, then stops it, and so on.)

6.6 DOS Batch Files

If you create DOS batch (.BAT) files for carrying out tasks including running GEMPACK programs, you may like to take advantage of the fact that, if any GEMPACK program ends with a fatal error, it sets the value of the DOS parameter ERRORLEVEL value to 1. You can test for this in .BAT files to stop the batch job early in such a case.

For example, the .BAT file below runs SAGEM and then GEMPIE. If the SAGEM run ends unsuccessfully, the test of ERRORLEVEL after it aborts the batch job and gives a message saying that the job was unsuccessful.

```
REM Beginning of batch file
REM  Run SAGEM
REM Next uses the –sti option (see section 4.5 of GPD-1)
sagem  -sti sag1.sti
REM test ERRORLEVEL to see if this was successful
if errorlevel 1 goto error
REM  Run GEMPIE
gempie -sti gemp1.sti
if errorlevel 1 goto error
echo off
echo BATCH JOB SUCCESSFUL
goto endbat
:error
echo off
echo *** ERROR: BATCH JOB FAILED ***
:endbat
REM End of batch file
```

Provided your GEMPACK programs are made with Release 6.0 or later of GEMPACK, we strongly recommend that you use “-sti” (as above) to run GEMPACK programs in a DOS batch file (rather than using input redirection). We have found “-sti” more robust under Windows NT than input redirection. The same applies to “-log” (rather than output redirection) if you want to generate a LOG file in this way.

CHAPTER 7

7. If You Are Unable to Install from a CD

If you do not have a CD drive on your PC, you may be able to copy the contents of the CD temporarily to your server and access the files on your PC from the server (see section 7.1). If this is not a possibility, you can make floppy disks from the CD (see section 7.2).

7.1 Installing from the CD Copied to the Network

If you copy all the files from the GEMPACK CD onto the network file server, you can use the files so copied to install on other machines (including those without a CD drive) attached to the network.

To do this, use *My Computer* or *Explorer* to copy **all** files in the top directory **e:** and **e:\ACROBAT** from the GEMPACK CD to a directory on the network (and appropriate subdirectories).[9] There is no need to copy the files for the CoPS Web pages in directories **e:\FTP** , **e:\HTM** and **e:\BROWSERS**. Then you can run the copied INSTALL.EXE to install GEMPACK on the network or on other machines which have access to the network.[10]

7.2 Making Floppy Disks from the CD

If your computer does not have a CD drive installed, you can make floppy disks on another computer that does have a CD drive.

To make floppy disks from the CD, open *My Computer* and look at the CD drive. Look at the folder or directory called DISKS. It should contain three sets of files:

- EXEINST.EXE, EXEINST.W02, EXEINST.W03, EXEINST.W04, EXEINST.W05
- WININST.EXE, WININST.W02, WININST.W03, WININST.W04, WININST.W05
- ANGEINST.EXE, ANGEINST.W02

The files EXEINST.* are the Executable-Image floppy disks. Copy each file to a separate floppy disk labelled clearly 1 to 5. [The first disk should contain just EXEINST.EXE and the second should contain just EXEINST.W02 and so on until all EXEINST files are on separate disks.] Insert the first EXEINST disk in the computer without a CD drive and enter

a:\exeinst.exe

to start the installation (instead of **a:\install.exe**). Follow the directions in section 3.2 about where to install the files. [You will be prompted to insert the other disks.]

Similarly, the files for installing WinGEM and other Windows programs are called WININST.*. Copy each file to a separate floppy disk labelled clearly 1 to 5. [The first disk should contain just WININST.EXE and the second should contain just WININST.W02 and so on till all WININST files are on separate disks.]

---

[9] Here we are assuming that your CD is drive e: . [Change this as appropriate.]

[10] Suppose, for example, that you have copied all files (including those in all subdirectories) from the CD into directory V:\DATA\INSTALLS. Then you can Run program V:\DATA\INSTALLS\INSTALL.EXE to install GEMPACK.

Insert the first WININST disk in the computer without a CD drive and enter

a:\wininst.exe

to start the installation (instead of **a:\install.exe**). You should install these files in the same directory as you installed the Executable-image files when you ran exeinst.exe. Follow the directions in section 3.2.1. [You will be prompted to insert the other disks.]

The files for installing AnalyseGE are called ANGEINST.*. Copy each file to a separate floppy disk. [The first disk should contain just ANGEINST.EXE and the next should contain just ANGEINST.W02.] Insert the first ANGEINST disk in the computer without a CD drive and enter

a:\angeinst.exe

to start the installation (instead of **a:\install.exe**). You should install these files in the same directory as you installed the other files above. Follow the directions in section 3.2.2. [You will be prompted to insert the other disks.]

Then you should copy your GEMPACK licence (if you have been given a new one) following the procedure in section 3.4.

Note that the steps in this section do not install the GEMPACK documentation. You can download individual documents from the GEMPACK web site.

Finally you may need to make the changes to AUTOEXEC.BAT described in section 3.3.

REFERENCES

8. GEMPACK DOCUMENTS

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