A Base Case Scenario for the Dynamic GTAP Model

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1. Introduction

The increasing interest in dynamic models and in particular the development of the Dynamic GTAP model at the Center for Global Trade Analysis has highlighted the need to develop a base case scenario depicting how the world economy might be expected the change over the next 20 years. The purpose of this paper is to show how such a base case scenario has been created for use with the Dynamic GTAP model (Ianchovichina, 1998 and Ianchovichina, McDougall and Hertel, 1999) and for version 4 of the GTAP data base.

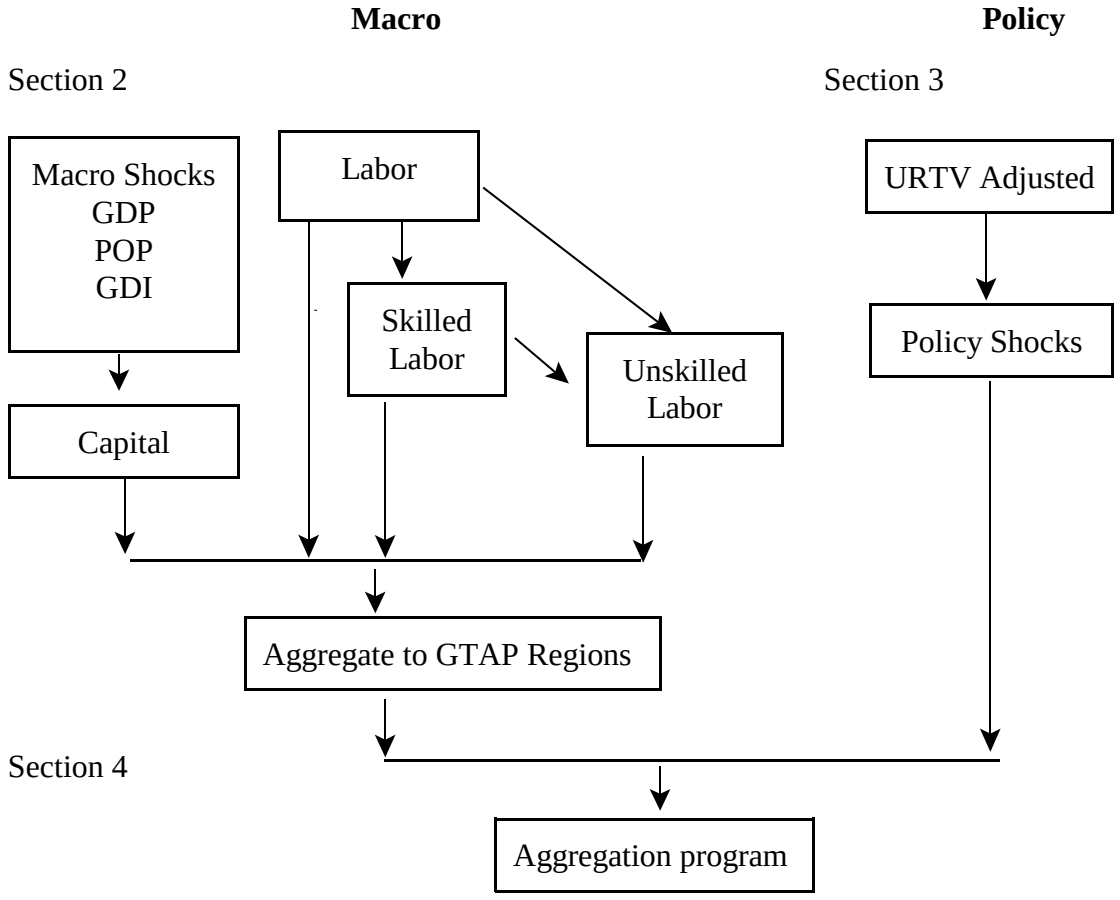
This document is intended to be used in conjunction with a base case aggregation program which was constructed at the Center for Global Trade Analysis. This program takes as its inputs macro and policy forecasts and allows the user to: 1) alter various assumptions about the implementation of policies; and 2) aggregate over time, regions and commodities; to obtain a base case scenario which is specific to their needs. Although the base case program is specifically designed with the Dynamic GTAP model in mind, it is general enough to be used with other models. It should be noted however, that the base case scenario developed here is very general, it looks only at the standard macro aggregates and does not provide alternative optimistic or pessimistic scenarios.

The base case scenario should reflect as closely as possible the changes expected to occur in the world economy. These changes in the world economy are be grouped into two areas: the first deals with the macro economic forecasts of each country and the second deals with expected policy changes. These two distinct areas are discussed in turn in sections 2 and 3. In section 4 we then bring the macro projections and the policy changes together and develop a program which allows us to aggregate these forecasts to obtain a base case scenario which corresponds to a particular GTAP aggregation. Figure 1 provides a diagrammatic overview of how the base case scenario has been constructed. This paper also follows this same structure outlined in Figure 1.

2. Macro Projections

The aim here was to use existing macro projections to obtain macro projections and the corresponding growth rates for the years 1995 to 2019 and for a set of standard countries. At the time of writing this document the standard country list consisted of the 211 countries listed in Table A1. The macro projections of interest here include gross domestic product, gross domestic investment, capital stocks, population, skilled labor and unskilled labor. The first sub-section contains a description of the source data, including the macro projections and macro data. In the second sub-section, these projections are used to obtain projections for the complete set of standard countries and years of interest.

Figure 1
Overview of Structure for Creating Base Case



2.1 Data Sources for Projections

2.1.2 Projections

Projections were obtained for gross domestic product, gross domestic investment, population, skilled labor and unskilled labor. The source of these projections and a description are given below:

1. *Gross domestic product, gross domestic investment and population data and projections* were available for 133 countries/regions for the period 1992 to 2007 (projections 1998 to 2007). These projections are consistent with regional forecasts made by the World Bank's Global Economic Perspectives Data Base.

2. *Labor force projections* in the form of number of male and female workers were available for 205 countries/regions. Projections were provided on a five yearly basis from 1990 to

2020. Before proceeding data on male and female workers were added togther to obtain projections for the total labor force.

3. *Skilled labor projections* were obtained from two sources.

   a) For the less developed countries projections of the share of secondary and tertiary educated labor as a proportion of the population were obtained for 71 developing countries. These were five yearly projections from 1990 to 2020. These projections were obtained from Ahuja and Filmer (1995).

   b) For the developed economies skilled labor projections were based on projected skilled labor shares for 12 developed/developing regions over the period 1994 to 2050. These were obtained from the CPB (1999).

2.1.2 Other Data Required

In addition to projections, macro data for the base or initial year (1995) was also collected for all standard countries. For GDP and population, data was obtained for each of the countries from either from the World Bank or from the CIA World Factbook. Other macro variables, including gross domestic investment and capital stocks, were either obtained directly from the World Bank or GDP shares were used to estimate their value. This base year data was used to scale data, fill in missing values and obtain capital stock projections. In this paper, this data is usually referred to as the base year data.

Base year shares of skilled labor in total labor were also estimated for the 25 developing countries for which only a single growth rate was available. These shares were derived from the GTAP data base as the value of skilled labor as a proportion of total labor.

2.2 Missing Data

Invariably the projections obtained from the various sources listed above will be incomplete and in some cases incompatible. Some processing is required to get them into a common format and ensure that there are values for all countries and for all years of interest. In this section, the assumptions made and the steps taken to obtain a complete set of projections are outlined. By complete we mean they cover all the years and countries of interest.

The macro projections are split into three groups which are discussed in turn below (see Figure 1). First are the gross domestic product, gross domestic investment and population projections, second the capital stock data and finally the labor, skilled labor and unskilled labor projections.

2.2.1 Gross Domestic Product, Gross Domestic Investment and Population Projections

A number of steps were undertaken to obtain gross domestic product, gross domestic investment and population projections for all standard countries. These included extrapolating, disaggregating regions, filling in projections for missing countries, scaling and finally calculating yearly growth rates. Each of these stages is discussed in turn below.

Extrapolation

The first step in obtaining macro projections for all the standard countries was to determine the growth rate between the final years for which projections data (2006-2007) were available. This final growth rate was then used to extrapolate projections out to the year 2019, so that from 2007 onwards the growth rates are constant.

Two checks were undertaken to ascertain the validity of this extrapolation method. Firstly, growth rates were graphed to ensure that any variability in growth rates had diminished by 2007. Growth rates for a set of countries can be seen in Figure 2. Secondly, the ratio of gross domestic investment to gross domestic product was calculated to ensure that this ratio did not change dramatically after 2007. The GDI/GDP ratios for a set of countries are depicted in Figure 3.

Figure 2
Ratio of Gross Domestic Investment to Gross domestic Product

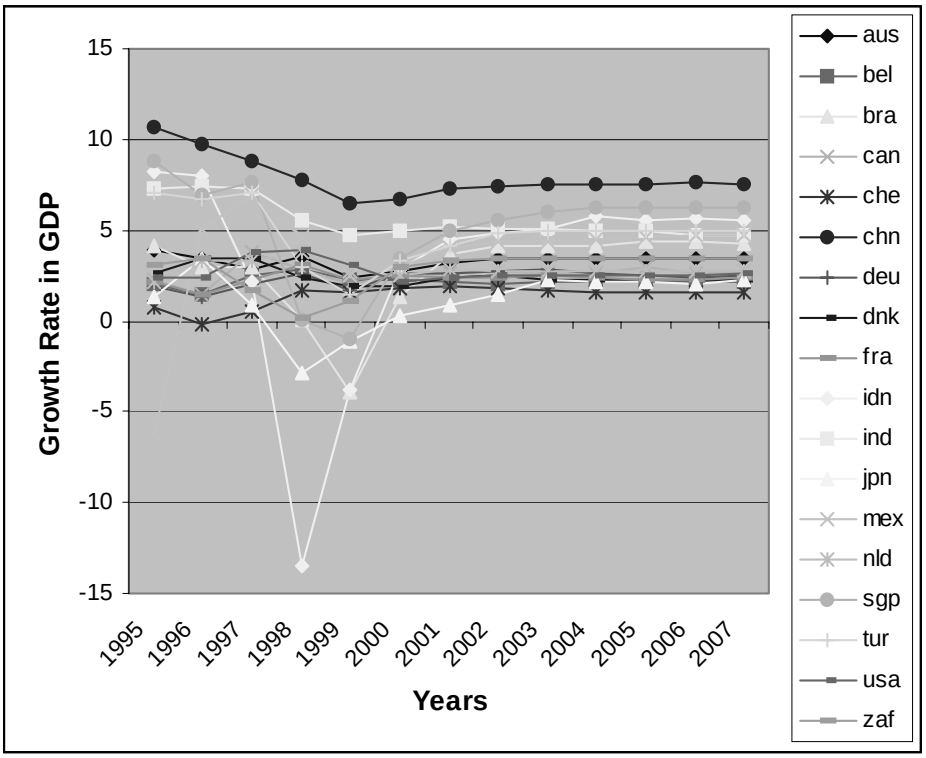
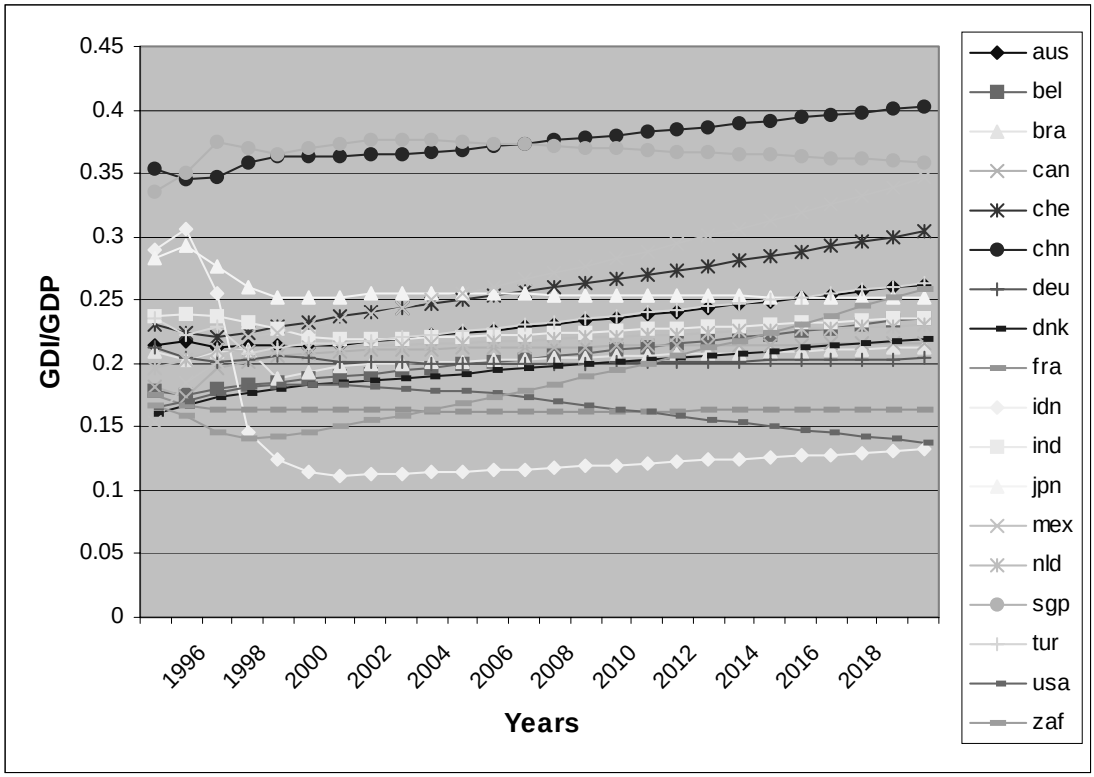


Figure 3
Ratio of Gross Domestic Investment to Gross domestic Product



Disaggregating Regions

While most of the projections data were for individual countries, there were a limited number of cases where projections data were provided on a regional basis. For example, projections were obtained for the entire Belgium-Luxembourg region, rather than for these two countries individually. For these composite regions the projections are divided across the countries contained in those regions using the relevant base year share, for example the GDP projections of Belgium-Luxembourg are divided using macro data on their respective levels of GDP in the base year and population projections are divided according to macro data on population. This assumes that the growth rates for all countries within a region are the same as the growth rate for the region as a whole. For example, Belgium is assumed to grow at the same rate as Luxembourg, where the rate is determined by the growth rate of the entire Belgium-Luxembourg region.

Filling in missing countries

The next step involved providing projections for those standard countries where projections data was not obtainable. Projections are filled by taking the total projected value for all countries for which data was available and multiplying it by the ratio of the missing country's base year value of the macro variable of interest to the total value for all countries for which projections data was available. For example to fill gross domestic investment for a particular country X, the total projected value of GDI for each given year is multiplied by the ratio of

county X's GDI in the base year to total GDI in the base year of all countries for which projections data was available (1).

$$GDI_t(X) = \sum_{s \in PROJ} GDI_t(r) \times \frac{GDI_{BASE}(X)}{\sum_{s \in PROJ} GDI_{BASE}(s)} \qquad (1)$$

where: s ranges over the sub-set of countries for which projections data was obtained.

Thus growth rates for those countries where data was not available were assumed to equal the average growth rate of the countries for which data was obtained.

Scaling

The projections data were based on 1992 prices. In addition projections for the base year (1995) were often inconsistent with those obtained from the GTAP database. In order to ensure consistency between the projections and the GTAP database all projections were scaled so that the base year projection was equal to the equivalent base year data collected.

Calculate growth rates

Finally these projections were converted into yearly growth rates. Both the projections and growth rates for all standard countries and all years of interest are kept as inputs for the next stage.

The program used to determine these projections was set up in such a way that other projections, such as capital stock or human capital projections, could be incorporated (by altering `mprjdat.txt` and `mprjset.txt`). The program assumes that projections are yearly and that base year values for these macro variables are available (or were estimated previously) for scaling purposes. In addition the years of interest (currently 1995 to 2019) may be altered (`years.txt`).

2.2.2 Capital Stocks Projections

Capital stock projections could not be obtained directly from data sources and thus had to be estimated. Projections for capital stocks ($K_t(r)$) were determined by adding projected gross domestic investment (GDI(r)) to the previous years projected capital ($K_{t-1}(r)$) stock less depreciation, where depreciation is 4 percent.

$$K_t(r) = K_{t-1}(r) \times (1 - DEPR(r)) + GDI(r) \qquad (2)$$

This program assumes that gross domestic investment projections and base year capital stocks are available for all standard countries, i.e. it uses the projected GDI from section 2.2.1. The capital stock projections and growth rates for all standard countries and all years of interest are included with the GDP, GDI and population projections and growth rates.

2.2.3 Labor Projections

Projections were obtained for total labor, skilled labor and unskilled labor. As was the case for gross domestic product, gross domestic investment and population, a number of steps were undertaken to obtain projections for the labor force projections for all standard countries. These included disaggregating regions, filling in projections for missing countries and filling in the missing years. The three types of labor projections are discussed in turn below.

2.2.3.1 Total Labor force Projections

Disaggregating Regions

While most of the labor projections data obtained were for individual countries, there were a limited number of cases where labor projections were provided on a regional basis. For example, labor projections were obtained for a region 'other Europe'. For these composite regions the labor projections were divided across the countries contained in those regions using population shares. This assumes that the growth rates for all countries within the region are the same as the growth rate for the region as a whole.

Filling in missing countries

The next step involved providing labor force projections for those standard countries where no labor force projections data was obtainable. Labor projections were filled by taking the total projected labor force for all countries for which data was available and multiplying it by the ratio of the missing country's population in the base year (obtained from the additional macro data collected) to the total population of the countries for which data was available, in the base year. Thus growth rates for those countries where data was not available were assumed to equal the average growth rate of the countries for which data was obtained.

Filling in the missing years

Labor force projections were available in five year intervals from 1990 to 2020. Thus it was necessary to fill in projections for the intermediate years. In order to do this it was first necessary to find the average yearly growth rate for each of these five year periods. It is assumed that growth rates for a particular country are equal for all years within the 5 year interval. These growth rates were then used to obtain projections for each year.

2.2.3.2 Skilled Labor Projections

As mentioned above skilled labor force projections were obtained from two source. Five yearly projected shares of labor force were obtained for the less developed countries while yearly projected shares were obtained for a number of developed economy regions. In order to obtain a complete set of projections a number of steps had be taken to both sets of data. For less developed countries missing years in the skilled labor shares need to be filled and projections determined. For the developed economies, regional skilled labor shares were attributed to the developed countries and projections calculated. Once the two sets are in a common format the two sets of projections are combined and any missing countries filled. Each of these stages is discussed in turn below.

Data for less developed economies is available for both tertiary and secondary education.

In the base case program tertiary education is used to estimate skilled labor, however projections and growth rates are determined for both tertiary and secondary education. The use of tertiary education as the estimate for skilled labor can be altered to secondary education if this were preferred (`sklabset.txt`).

Less Developed Countries

Projections for less developed countries are initially given as projected shares of the labor force. Shares are available in five year intervals from 1990 to 2020. In order to obtain projections two steps are undertaken.

Firstly, it is necessary to fill in projections for the intermediate years. In order to do this it was first necessary to find the average yearly growth rate for each of these five year periods. It was then assumed that within a given five year period yearly growth rates of shares for a particular country are equal. These growth rates are then used to obtain the projected shares for each year.

Secondly, the shares are then used to determine the projected number of people with a tertiary and secondary education. This is found by multiplying the projected share with the projected labor force determined above.

$$SKLAB_t(i,r) = SKLABSHR_t(i,r) \times LAB_t(r) \qquad (3)$$

where: i = secondary and tertiary.

Developed Countries

The share of skilled labor in the total labor force were obtained for 12 regions. These regions included both developing and developed regions. 25 developed economies were then given the projected shares of the region in which they were located. These shares were then combined with the labor force projections determined above to obtain projected skilled labor shares.

Combining and Filling

The next step involved providing skilled labor force projections for those standard countries where no skilled labor projections data was available. Skilled labor projections were filled by taking the projected value of labor for that country and multiplying it by the total average share of skilled labor in total labor. The total average share of skilled labor in total labor uses both the projections for the developed and less developed countries.

2.2.3.3 Unskilled Labor Projections

Once total labor and skilled labor projections were determined, unskilled labor projections were calculated as the difference between the total labor and skilled labor projections.

2.3 Aggregation to GTAP Sectors

2.3.1 Aggregation

At this stage we have projections for gross domestic product, gross domestic investment, capital stocks, population, labor force, skilled and unskilled labor for all standard countries and for each year from 1995 to 2019. For GTAP data base users and in particular for the GTAP-Dyn model the projections and growth rates are then aggregated to obtain projections for each of the 45 GTAP regions. Growth rates are aggregated using the projections as weights; for example, GDP growth rates for the year 2010 were aggregated using projected GDP shares for 2010.

3. Policy Projections

Having obtained the macro projections, the next step is to examine the policy shocks that form part of a legitimate base case scenario. A number of policy shocks are calculated for incorporation into the base case scenario. These include:

1. the implementation of the Uruguay Round (UR);
2. some pre-WTO accession tariff reductions implemented by the Chinese prior to 2000;
3. the implementation of China's accession to the World Trade Organisation (WTO);
4. the implementation of the Agreement on textiles and clothing; and
5. finally shocks to tariff rates required to simulate a slow decrease in tariffs after the completion of the UR.

The aim here is to develop a realistic policy scenario for the global economy. Over the last 50 years there has been a gradual reduction in tariffs world-wide, underlying the excessive growth in global trade. It is believed that this gradual reduction in tariffs and the corresponding increase in trade will continue after the UR has been fully implemented. The elimination of quotas on textiles and wearing apparel is implemented by reducing export taxes. This approach is analogous to reducing the quotas rents earned from these quotas.

The first sub-section contains a description of the original sources for the policy projections. In the second sub-section, some preliminary changes to the data are outlined and then in the third, the data is used to obtain shocks for the relevant policy variables.

3.1 Data Sources

The following data on the UR agreements and on China's accession were obtained:

1. Post-UR tariff estimates were obtained from Francois and Strutt (1999). These estimates were based on post-UR information from version 3 of the GTAP database and the GATT/WTO integrated database (IDB). These estimates were in the form of post-Uruguay tariff revenue (URTV). These tariff revenues had been updated to reflect version 4 of the GTAP data base by Dimaranan (1999).
2. Export tax equivalents used to simulate the effects of reducing the quotas on textiles and wearing apparel under the MFA. These were obtained from the GTAP data base.

3. Tariff's imposed by China on a subset of GTAP commodities were obtained for 1996 and 1998 from Fan and Zheng (2000). The percentage change in these two rates were then applied as shocks to the GTAP tariff rates.

4. Estimates of the weighted average applied tariff rates offered by China for their accession to the WTO were obtained from Martin et. al. (1999) of the World Bank. These were based on the August 1999 offer and were available for 38 of the 50 GTAP commodities and 41 of the 45 GTAP regions. These tariffs had been updated to reflect version 4 of the GTAP data base by Dimaranan (1999).

5. Similarly average tariff rates for Taiwan were obtained from Dimaranan (1999).

3.2 Updating the post-UR tariffs

A number of problems were noted with using the supplied post-Uruguay Round tariff revenue data obtained. As a result these tariff revenues were adjusted in three ways:

a) Large differences between the actual tariff revenue provided in versions 3 and 4 of the GTAP data base for beverages and tobacco led to substantially different shocks being applied to simulate the UR depending on which version of the GTAP database you were using. As a result the URTV for beverages and tobacco was adjusted to ensure that the final shock obtained in version 4 was the same as that obtained in version 3.

b) The accession offers of Taiwan and China were incorporated into the post-UR tariff revenues.

c) Also it was decided that all regions (except China and Taiwan) would not proceed any further with the liberalization of their agricultural markets, despite the Uruguay round agreements. As a result the URTV values for agricultural commodities were set equal to the current tariff revenues.

This new URTV is then used to find the shocks required to simulate the effects of the UR.

3.3 Policy shocks

A number of steps were undertaken to obtain a set of yearly shocks to tariffs and export subsidies for all of the GTAP sectors and regions. These included calculating the various shocks, converting these shocks into yearly rates and finally combining these shocks to obtain a set of shocks on tariffs and export subsidies which are dependent on time. Each of these stages is discussed in turn below.

Calculating the Shocks

Four types of shocks are calculated. The first is the shock required to implement the UR; secondly, the shocks to tariff required to reduce all tariffs slowly to zero after the completion of the UR; thirdly, the shocks to export subsidies to eliminate the quota rents under the Agreement on textiles and clothing (ATC); and finally, shocks to reduce the tariffs of China to their current rates.

Determining Yearly Shocks

The shocks calculated above are those shocks required to bring the tariff revenue or quotas rents down to a specified level. Tariffs and quotas are treated slightly differently. In the case of tariffs, the reduction is assumed to occur gradually over several years. Each year the tariff is reduced by the same amount so that the specified tariff level is achieved in the final year. In order to calculate these yearly shocks data is required on the initial year and on the length of time over which the shocks are expected to occur. For the shocks to quota rents, the proportion of the reduction to occur in each period must be specified (`atc.txt`). This allows the user to back load the elimination of quotas as per the agreement on textiles and clothing. For example quotas may be eliminated over 10 years where 1% of the total shock is applied in the first five years (1995-1999), 2% in 2000, 8% in 2001, 16% in 2002, 32% in 2003 and 37% in 2004.

Table 1 provides the time periods used in the standard base case scenario. It is possible to adjust the timing of policies by altering a text file (`yrpolicy.txt`). Note also that China and Taiwan are considered special cases. Their timing is determined separately from the other regions (other regions can be added to this list of special regions). The shocks are assumed to be undertaken in equal installments over the period.

Combining Shocks

The resulting yearly shocks to tariffs and export subsidies are combined to include a time dimension to take account of the differences in implementation of policies. Table 1 provides a summary of the timing used for the standard base case scenario. Although the Chinese tariff reductions were calculated as the difference between 1996 and 1998 rates the reductions are applied across the entire period 1995 to 2000. These reductions are probably underestimated, given the extent of liberalization undertaken by China during this period.

Table 1
Policy Shocks

	tms	**txs**
1995 - 1999	1. UR tariff reductions for all regions except China and Taiwan (no shocks to agriculture). 2. Pre-WTO tariff reductions undertaken by China prior to 2000.	USA and EU quotas increased on exports of textiles and wearing apparel for all regions except Taiwan and China.
2000 - 2004	UR tariff reductions for all regions. China and Taiwan's WTO agreement included (no shocks to agriculture, except for China and Taiwan).	USA and EU quotas increased on exports of textiles and wearing apparel for all regions (including Taiwan and China).
2005 - 2019	Post-UR Tariffs are reduced slowly to zero (this is assumed to occur over 20 years).	

4. The Base Case Aggregation Program

Finally the macro projections and the policy shocks are gathered together into the final program which is then used to aggregate the shocks. The purpose of this is to obtain a base case scenario that matches the GTAP aggregation to be used in your particular application. In addition to aggregating across regions and commodities the aggregation program also allows you to cumulate shocks across time. For example, currently shocks are cumulated over 5 years[1]. The macro shocks for the period 1995 to 1999, for a particular GTAP aggregation, are depicted in Table 2 below.

For projected growth rates in endowments (i.e. capital, skilled labor and unskilled labor) and policy shocks the weights used for the aggregation are those obtained from the GTAP database, updated each period by the rate of growth, while the projected growth rates of GDP and population are aggregated using the projected GDP and population shares.

The resulting shocks are then used in the base case scenario for the Dynamic GTAP model.

5. An Example Base Case Scenario for GTAP-Dyn

The shocks obtained in the base case aggregation have been used to create a base case scenario for the Dynamic GTAP model. The following is an example of how some of these forecasts are then used to put together a base case scenario. The example used here is the same base case as used in the China's accession experiment undertaken by Walmsley and Hertel (2000).

Macro Forecasts

The following macro shocks were used in the example base case scenario:

- The forecasts for real GDP were used to calibrate a region-specific technological change.
- The shocks to population, and skilled and unskilled labor were used to incorporate the growth in those endowments. Notice that the shocks to capital were not used, instead the model was used to determine the growth in capital in the base case. In other base cases (used in Ianchovichina, McDougall and Hertel, forthcoming; and described in detail in Ianchovichina, 1998) capital forecasts have been used to calibrate technology.
- Asia's gross domestic investment over the period 1995 to 1999 was also used to in the base case to show the effects of the Asian crisis. These shocks to investment were used to calibrate the unexpected change in the expected rate of return over this period.

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[1] A mapping file containing how the years should be aggregated is contained in mapyrs.txt. You should also alter `yrmake.txt`. This file contains a list of the years which are converted into shock files for use. Currently this file contains the following numbers 001, 002, 003, 004, 005 corresponding to the periods 1995-1999, 2000-2004, 2005-2009, 2010- 2014 and 2015-2019.

Policy forecasts in Base Case

The policies incorporated into the base case scenario for the example are given below in Table 3. Notice that China's accession is not included because this was the policy experiment and was incorporated into the policy simulations.

Table 3

Policy Shocks used in Example Base Case Scenario

	tms	**txs**
1995 - 1999	1. UR tariff reductions for all regions except China and Taiwan (no shocks to agriculture). 2. Pre-WTO tariff reductions undertaken by China prior to 2000.	USA and EU quotas increased on exports of textiles and wearing apparel for all regions except Taiwan and China. Quotas were eliminated at rate of 1 percent per year.
2000 - 2004	UR tariff reductions for all regions except China and Taiwan (no shocks to agriculture).	USA and EU quotas increased on exports of textiles and wearing apparel for all regions except Taiwan and China. Quotas were eliminated at the rate of 2 percent in the first year and 8, 16, 32 and 37 percent in subsequent years. So that by 2004 100 percent had been eliminated.
2005 - 2019	none	none

Table 2
Macro Projections 1995-1999

	GDP	Population	Unskilled Labor	Skilled labor	Labor	Capital
NAmerica	16.26454	5.792619	6.589659	7.239714	6.819478	20.26454
WEurope	11.85047	1.227555	-0.27686	1.88298	0.782356	11.25106
AusNZL	16.17023	6.3403	5.26518	6.834004	6.066633	16.16235
Japan	1.714251	1.384011	-1.09585	0.040904	-0.52966	18.61552
China	51.77695	4.894598	4.831316	18.12127	4.968375	69.27494
Taiwan	29.99533	4.142871	8.489261	10.70382	8.709164	45.34046
OthNICs	16.76067	5.857206	-0.36281	36.17571	5.191874	45.17414
Indonesia	-0.70519	7.625785	10.47773	66.02557	11.97315	45.00313
OthSEA	13.32707	8.71162	11.07991	31.8557	13.17234	48.03828
India	36.90223	8.812393	10.49015	33.14024	11.3443	35.52939
OthSoAsia	21.96725	11.41634	15.59627	34.6516	15.96174	27.73749
Brazil	6.346049	6.71547	10.57345	30.41635	11.85007	15.71089
OthLatAm	14.55586	9.035825	8.296877	41.15634	11.51283	17.41662
Turkey	27.9097	8.366323	8.28118	47.96973	10.23662	25.66018
OthMENA	13.25175	12.63743	16.55865	26.6198	17.25113	4.952102
EIT	-3.08317	0.475524	2.527879	4.620778	2.735706	11.65106
SoAfrCU	10.91315	10.30706	13.68881	16.27409	13.92648	5.78993
OthSSA	18.66137	15.22372	16.83136	21.35627	17.05931	9.938544
ROW	18.11668	7.986017	9.033057	12.69534	9.243699	16.92168

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Table A.1
List of Standard Countries

abw	Aruba	lao	Lao PDR
afg	Afghanistan	lbn	Lebanon
ago	Angola	lbr	Liberia
aia	Anguilla	lby	Libya
alb	Albania	lca	St. Lucia
and	Andorra	lie	Liechtenstein
ant	Netherlands Antilles	lka	Sri Lanka
are	United Arab Emirates	lso	Lesotho
arg	Argentina	ltu	Lithuania
arm	Armenia	lux	Luxembourg
asm	American Samoa	lva	Latvia
atg	Antigua and Barbuda	mac	Macao
aus	Australia	mar	Morocco
aut	Austria	mco	Monaco
aze	Azerbaijan	mda	Moldova
bdi	Burundi	mdg	Madagascar
bel	Belgium	mdv	Maldives
ben	Benin	mex	Mexico
bfa	Burkina Faso	mhl	Marshall Islands
bgd	Bangladesh	mkd	Macedonia, FYR
bgr	Bulgaria	mli	Mali
bhr	Bahrain	mlt	Malta
bhs	Bahamas, The	mmr	Myanmar
bih	Bosnia and Herzegovina	mng	Mongolia
blr	Belarus	mnp	Northern Mariana Islands
blz	Belize	moz	Mozambique
bmu	Bermuda	mrt	Mauritania
bol	Bolivia	mtq	Martinique
bra	Brazil	mus	Mauritius
brb	Barbados	mwi	Malawi
brn	Brunei	mys	Malaysia
btn	Bhutan	myt	Mayotte
bwa	Botswana	nam	Namibia
caf	Central African Republic	ncl	New Caledonia
can	Canada	ner	Niger
che	Switzerland	nga	Nigeria
chl	Chile	nic	Nicaragua
chn	China	nld	Netherlands
civ	Cote d'Ivoire	nor	Norway
cmr	Cameroon	npl	Nepal
cog	Congo	nru	Nauru
col	Colombia	nzl	New Zealand
com	Comoros	oan	Taiwan

cpv	Cape Verde
cri	Costa Rica
cub	Cuba
cym	Cayman Islands
cyp	Cyprus
cze	Czech Republic
deu	Germany
dji	Djibouti
dma	Dominica
dnk	Denmark
dom	Dominican Republic
dza	Algeria
ecu	Ecuador
egy	Egypt, Arab Rep.
eri	Eritrea
esp	Spain
est	Estonia
eth	Ethiopia
fin	Finland
fji	Fiji
fra	France
fro	Faeroe Islands
fsm	Micronesia, Fed. Sts.
gab	Gabon
gbr	United Kingdom
geo	Georgia
gha	Ghana
gib	Gibralta
gin	Guinea
glp	Guadeloupe
gmb	Gambia, The
gnb	Guinea-Bissau
gnq	Equatorial Guinea
grc	Greece
grd	Grenada
grl	Greenland
gtm	Guatemala
guf	French Guiana
gum	Guam
guy	Guyana
hkg	Hong Kong
hnd	Honduras
hrv	Croatia
hti	Haiti
hun	Hungary
omn	Oman
pak	Pakistan
pan	Panama
per	Peru
phl	Philippines
png	Papua New Guinea
pol	Poland
prk	Korea, Dem. Rep.
prt	Portugal
pry	Paraguay
pyf	French Polynesia
qat	Qatar
rom	Romania
rus	Russian Federation
rwa	Rwanda
sau	Saudi Arabia
sdn	Sudan
sen	Senegal
sgp	Singapore
slb	Solomon Islands
sle	Sierra Leone
slv	El Salvador
smr	San Marino
som	Somalia
stp	Sao Tome and Principe
sur	Suriname
svk	Slovak Republic
svn	Slovenia
swe	Sweden
swz	Swaziland
syc	Seychelles
syr	Syrian Arab Republic
tcd	Chad
tgo	Togo
tha	Thailand
tjk	Tajikistan
tkm	Turkmenistan
ton	Tonga
tto	Trinidad and Tobago
tun	Tunisia
tur	Turkey
tuv	Tuvalu
tza	Tanzania
uga	Uganda
ukr	Ukraine

idn	Indonesia
ind	India
irl	Ireland
irn	Iran, Islamic Rep.
irq	Iraq
isl	Iceland
isr	Israel
ita	Italy
jam	Jamaica
jor	Jordan
jpn	Japan
kaz	Kazakstan
ken	Kenya
kgz	Kyrgyz Republic
khm	Cambodia
kir	Kiribati
kna	St. Kitts and Nevis
kor	Korea, Rep.
kwt	Kuwait
ury	Uruguay
usa	United States
uzb	Uzbekistan
vct	St. Vincent and the Grenadines
ven	Venezuela
vgb	British Virgin Islands
vnm	Vietnam
vut	Vanuatu
wbg	West Bank and Gaza
wsm	Western Samoa
yem	Yemen, Rep.
yug	Yugoslavia, FR (Serbia/Montenegro)
zaf	South Africa
zar	Zaire
zmb	Zambia
zwe	Zimbabwe