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Demographic Dynamics and the Empirics of Economic Growth

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Abstract

This paper examines the effects of demographic dynamics on the measured rates of economic growth. First, it develops a model of production with labor productivity that varies with age. Second, it uses macroeconomic and demographic data to estimate the relative productivity of different age groups. Third, it constructs a panel database of effective labor supply in order to reflect the changing age-structure of the population. Fourth, it decomposes the historical measured growth rates into effects of demographic dynamics and into "real" growth rates, net of demographic effects.

JEL Classification Numbers:
J11, J21, O47

1/ This paper is a revised version of the third chapter of my Ph.D. thesis, presented to Harvard University in July 1994. I would like to thank all the participants in the Macro-Growth seminar at Harvard, and especially Professor Robert Barro, for helpful comments and discussions.

Contents

Summary

This paper examines the effects of demographic dynamics on the measured rates of economic growth. The presence of strong demographic dynamics affects the measurements of the differences in economic performance both across countries and over time. Having better measures of economic growth is extremely important for improving our understanding in this area and has direct policy applications. This paper attempts to improve the empirics of economic growth by taking full account of the effect that demographic dynamics have on economic growth. The methodology used in this paper is unique in that it relies on macro rather than micro data.

The principal result of this paper is the construction of a panel data base covering 119 countries for the period 1960-85 that includes measures of economic growth that are free of demographic effects. Other significant findings include a function that describes how productivity of labor varies with age and a panel data base of average effective labor supply per person, covering both past and future periods, up to the year 2025.

I. Introduction

This paper examines the effects of demographic dynamics on the measured rates of economic growth.

The presence of strong demographic dynamics effects the measurements of the differences in economic performance both across countries and over time. The main target of this paper is to estimate the magnitude of this effect, in order to construct measures of economic growth that are free of demographic effects. In order to estimate this effect, we also need to estimate the relative productivity of different age-groups. But before doing so, we first have to develop a model of production with labor productivity that varies with age.

The paper uses macro data, rather than micro data, to estimate this age-related labor productivity function. The input consists of two international panel databases, a macroeconomic database and a demographic database.

The paper generates the following output:

(a) An estimated function, describing how labor productivity varies with age.

(b) Estimated labor productivity for each country in the database, during the period 1950-1985.

(c) Forecasts of labor productivity for each country in the database, for the period 1990-2025.

(d) A new panel database for the period 1960-1985, including measures of output that are adjusted so to be free of demographic effects.

All these databases are available upon request from the author.

The rest of the paper is organized as follows:

Section 2 discusses the problem of measuring the rates of economic growth using data effected by demographic dynamics.

Section 3 develops a model of production with age-related productivity and derives a method to measure the effects of demographic dynamics.

Section 4 presents the empirical data that are used in this paper.

Section 5 uses the data presented in Section 4 in order to estimate the model developed in Section 3 and to determine the exact way in which productivity varies with age.

Section 6 constructs two panel databases. The first measures effective labor supply, and the second adjusts measured GDP data to be free of demographic effects.

Section 7 presents concluding remarks.

II. The Demographic Factor in Empirical Studies of Growth

Many papers dealing with empirical research on economic growth have been published in recent years. A common feature of these papers is their heavy use of databases containing GDP per capita measures over a period of 25-40 years, such as Summers and Heston's 1991 database. A significant problem associated with this type of data is that the period covered is a short one in terms of demographic dynamics. Suppose, for example, there is a strong baby boom at a time that closely precedes the beginning of the sample and that occurs in a subset of the countries covered by it. Then, in the base period of the sample, a large fraction of the population in these countries consists of young children who are less productive. In this situation, even if GDP per capita is measured accurately, it can not be a good proxy for the real strength of the economy. Furthermore, at the end of the sample, the baby boom generation will be mature and fully productive, and the whole demographic structure will be much more favorable. In this case, the economic growth measured by the growth of GDP per capita in the period covered by the sample will be biased significantly upward.

The problem is that the measured growth is a combination of two factors. The first factor is "real" growth, in the meaning that is usually used by economists and other observers, as well as by policy-makers. The second factor is that of demographic dynamics, as explained previously. In the short period covered by most databases used in the empirical research of economic growth, the effect of the demographic dynamics on measured growth may be quite strong. Comparing growth rates across different countries, as well as across different periods, should therefore take into account demographic effects.

To solve this problem it was common in some studies to look at measures of GDP per worker (or per potential worker), instead of GDP per capita. 1/ The first flaw in this approach is that the definition of worker or potential worker is arbitrary and the results are sensitive to the specific choice of the work-starting age, as well as the retirement age. The second flaw in this approach is the unrealistic assumption of flat productivity over the work period. The third flaw is the assumption of zero net contribution to production by young children or elderly persons. There is no a priori reason to believe that the net contribution of these groups of people is zero rather than positive or negative.

The remaining sections of this paper attempt to develop a better solution to this problem. The strategy will be to estimate the effects of demographic dynamics on economic growth and to construct a new panel database that will be free of demographic effects. This database might be used for direct policy applications, as well as in future empirical studies of economic growth. The paper generates an additional database, which may

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1/ This approach was taken, for example, by Mankiw, Romer and Weil (1992).

prove to be especially useful for long-run economic policy and social planning. This database contains estimates of average labor productivity for a large set of countries in the past, as well as forecasts for future periods, up to the year 2025.

III. The Age-Related Productivity Model

This section develops a model of production that assumes different productivity levels for different age-groups. The model yields a simple reduced form that can easily be estimated to determine the relative productivity of the different age-groups.

Assume a Cobb-Douglas production function:

$$Y_{it} = A_{it} K_{it}^{\alpha} L_{it}^{1-\alpha} \tag{1}$$

where i is the country index, t is the period index, Y is the output, A is a technology (or knowledge) parameter, K is the amount of capital and L is the amount of labor supplied.

Divide this production function by the population size:

$$y_{it} = A_{it} k_{it}^{\alpha} l_{it}^{1-\alpha} \tag{2}$$

where y is the output per person, k is capital per person and l is the amount of labor supplied by the average person.

Multiply and divide k by y and take logs:

$$\log (y_{it}) = \log (A_{it}) + \alpha \log ((\frac{k}{y})_{it}) + \tag{3}$$

$$+ \alpha \log (y_{it}) + (1-\alpha) \log (l_{it}) \tag{4}$$

Take y to the left-hand side and divide by $(1-\alpha)$:

$$\log(y_{it}) = \frac{\log(A_{it})}{1-\alpha} + \frac{\alpha}{1-\alpha} \log((\frac{k}{y})_{it}) + \log(l_{it}) \tag{5}$$

Take first differences to obtain an expression describing the growth rate of output per person:

$$\log (\frac{y_{i(t+1)}}{y_{i(t)}}) = \frac{1}{1-\alpha} \log (\frac{A_{i(t+1)}}{A_{i(t)}}) + \tag{6}$$

$$+ \frac{\alpha}{1-\alpha} \log (\frac{(k/y)_{i(t+1)}}{(k/y)_{i(t)}}) + \log (\frac{l_{i(t+1)}}{l_{i(t)}}) \tag{7}$$

and define g to be a normalization of the rate of technological progress:

$$g_{it} = \frac{1}{1-\alpha} \log (\frac{A_{i(t+1)}}{A_{i(t)}}) \tag{8}$$

Assume, following the conditional convergence literature, that the rate of growth of the capital/output ratio can be approximated by a linear function in the log of output per person:

$$\frac{\alpha}{1-\alpha} \log \left(\frac{(k/y)_{i(t+1)}}{(k/y)_{i(t)}}\right) = \theta_0 - \theta_1 \log (y_{i(t)}) \tag{9}$$

and obtain the following growth equation:

$$\log \left(\frac{y_{i(t+1)}}{y_{i(t)}}\right) = g_{i(t)} + \tag{10}$$

$$+ \theta_0 - \theta_1 \log (y_{i(t)}) + \log \left(\frac{l_{i(t+1)}}{l_{i(t)}}\right) \tag{11}$$

All the previous assumptions represent conventional practice in the growth literature. The key step in this section, however, is to assume that l (the average labor supply per person) is a function of demographics. Specifically, assume that l is a function of the demographic structure of the population that can be summarized by n age groups, that each age-group provides a different intensity of labor proportional to its relative productivity, and that the type of labor supplied by one age-group is a perfect substitute for the type of labor supplied by another age-group. Then, omitting i and t subscripts:

$$l = \beta_1 b_1 + \ldots + \beta_n b_n \tag{12}$$

where the βs are the coefficients of relative productivity and the bs are the shares of each age-group in total population ($b_1 + \ldots + b_n = 1$).

Define ($m_1, \ldots ,m_n$) to be the *mean demographic distribution* of all the bundles ($b_1, \ldots ,b_n$) in the sample (for every age-group j, m_j is the mean value of b_j in the sample).

Now, define l_m to be the *mean labor supply*, the labor supply that corresponds to the mean demographic distribution, and let its value be equal to 1 by definition:

$$l_m = \beta_1 m_1 + \ldots + \beta_n m_n = 1 \tag{13}$$

For each age-group j, define d_j to be the deviation of b_j from the mean:

$$d_1 = b_1 - m_1 , \ldots , d_n = b_n - m_n \tag{14}$$

Define:

$$\gamma = \beta_1 d_1 + \ldots + \beta_n d_n \tag{15}$$

Using all these definitions, we can write the labor supply as:

$$l = 1 + \gamma \tag{16}$$

Because the demographic distribution ($b_1, \ldots, b_n$) can not be very different from its mean ($m_1, \ldots, m_n$), γ is a small number (close to 0) and l (the labor supply) is close to 1 (the mean labor supply). Therefore, we can use the first-order approximation $\log(1+\gamma) = \gamma$ to obtain:

$$\log(l) = \beta_1 d_1 + \ldots + \beta_n d_n \tag{17}$$

Take first differences to obtain the growth rate of the average labor per person:

$$\log(l_{i(t+1)}) - \log(l_{i(t)}) = \tag{18}$$

$$= \beta_1 (d_{1i(t+1)} - d_{1i(t)}) + \ldots + \beta_n (d_{ni(t+1)} - d_{ni(t)}) \tag{19}$$

This expression can also be written as:

$$\log\left(\frac{l_{i(t+1)}}{l_{i(t)}}\right) = \beta_1 (b_{1i(t+1)} - b_{1i(t)}) + \ldots + \beta_n (b_{ni(t+1)} - b_{ni(t)}) \tag{20}$$

Substitute this last expression into the expression for the growth rate of output:

$$\log\left(\frac{y_{i(t+1)}}{y_{i(t)}}\right) = g_{i(t)} + \theta_0 - \theta_1 \log(y_{i(t)}) + \tag{21}$$

$$+ \beta_1 (b_{1\,i(t+1)} - b_{1\,i(t)}) + \ldots + \beta_n (b_{n\,i(t+1)} - b_{n\,i(t)}) \tag{22}$$

Use the definition of the *mean labor supply* to express β_n as a function of the other βs:

$$\beta_n = \frac{1 - (\beta_1 m_1 + \ldots + \beta_{n-1} m_{n-1})}{m_n} \tag{23}$$

Define:

$$q_{i(t)} = \frac{b_{ni(t+1)} - b_{ni(t)}}{m_n} \tag{24}$$

$$p_{ji(t)} = b_{ji(t+1)} - b_{ji(t)} - m_j\, q_{i(t)} \tag{25}$$

$$yy_{i(t)} = \log(y_{i(t+1)}) - \log(y_{i(t)}) - q_{i(t)} \tag{26}$$

Finally, get a reduced form that can be used to estimate the β coefficients:

$$yy_{i(t)} = g_{i(t)} + \theta_0 - \theta_1 \log(y_{i(t)}) + \tag{27}$$

$$+ \beta_1\, p_{1[i(t)]} + \ldots + \beta_{n-1}\, p_{n-1[i(t)]} \tag{28}$$

IV. The Data

The data used in this paper are contained in two databases. The first one is the PWT-5.5 database. 1/ It contains data on GDP for 150 countries in the period 1950-1990. We restrict our attention only to the 121 countries with continuous observations every 5 years, during the period 1960-1985. 2/ The second database is the United Nations (1990) database on the distribution of the population among different age-groups for each country at 5-year intervals. The ages also are divided into 5-year groups and the period covered is 1950-1985. This database also contains forecasts for the period 1990-2025. All of the countries covered by the first database, except Seychelles and the Taiwan Province of China, are also covered by the United Nations data. Therefore, we restrict our observations to the 119 countries for which we have continuous macroeconomic and demographic information for the period 1960-1985. The Appendix contains a list of these countries.

V. The Estimation of the Age-Related Productivity Structure

This section estimates the relative productivity of each age-group and the effects of demographic dynamics on economic growth.

We use the reduced form we obtained from the model presented in Section III. The dependent variable, $yy_{i(t)}$, is constructed using information on growth rates of income per person from time t to time $t+1$, information on the change in the fraction of population of one of the age-groups ($b_{n\ i(t+1)} - b_{n\ i(t)}$) and information on the average fraction of population at this age-group in the sample.

The variables on the right are a constant, a term linear in the log of output per person and a group of $n-1$ other variables, each corresponding to one of the other $n-1$ age-groups. Our purpose is to estimate the vector of productivity coefficients ($\beta_1, \ldots, \beta_{n-1}$).

The GDP series is constructed from the PWT-5.5 database, that contains information on output per person and on population size. The GDP per person series is constructed dividing the GDP series by the total population data from the United Nations' database. 3/

1/ The PWT-5.5 database is an updated version of the PWT-5.0 database, published by Summers and Heston (1991).

2/ The set of countries for which we have information before 1960 is much smaller. It does not include many less developed countries, and in particular many African countries.

3/ Alternatively, we could use directly the GDP per person data from the PWT-5.5 database. The two measures are almost identical. For consistency, we decided to use the demographic database for all demographic data.

The data from the United Nations divides the age structure into 17 age-groups, each containing a 5-year interval (*0-4, 5-9, ..., 75-79, 80+*). For symmetry reasons, we define age-group *n*, the one that is used as numeraire, to be the middle group (*40-44*). Therefore, we need to estimate the coefficients for the other 16 groups. An estimated coefficient bigger than *1* means that the productivity of the respective age-group is above average. An estimated coefficient smaller than *1* means that the productivity of the respective age-group is below average. Finally, a negative coefficient indicates that the net contribution of the respective age-group is negative, meaning that people of this age not only do not increase total production, but actually decrease it. 1/

One necessary assumption is the causality direction. We assume that income responds immediately to changes in the age distribution, but the age distribution is "sticky" in the short run (a 5-year period) and can not respond immediately to differences in growth rates. Of course over longer periods the demographic distribution may respond to differences in growth rates through changes in fertility and in life-expectancy. By restricting the period to 5 years only, it is safe to assume that this reversed causality is non-existent or negligible. 2/

The essence of the econometric problem is to find a reasonable way to estimate the 16 productivity coefficients. The problem is not only the large number of explanatory variables, but also the high degree of multicolinearity among them. The way we solve this problem is to define a polynomial transformation of these age-groups and then estimate the coefficients of this polynomial function. The values of the 16 productivity coefficients can then be recovered from the estimated coefficients of the polynomial function by using the inverse of the polynomial transformation.

The prior expectation about the function that relates productivity to age is that it is continuous and has an inverse-U shape (a parabola). Therefore, it is natural to choose a 2^{nd} degree polynomial function to represent the productivity coefficients of the age-groups. We define for each age-group *j* an age-distance *ad* that represents its position in the age structure relative to group *n*, the middle group *40-44*. Table 1 describes this construction:

1/ This may happen if these people require the time resources or the physical resources of people in other age groups. These resources could otherwise be used in production.

2/ Another way to look at this problem is the following argument: The 3 factors that effect population dynamics are fertility, mortality and migration. We assume that these 3 factors respond only to income per person and not to the rate of growth. A 5-year period is short enough to assume that changes in income per capita caused by differences in growth rates are small and recent enough to effect any one of these 3 factors.

Table 1. The Construction of the Age-Distance Measure

	age	ad		age	ad		age	ad		age	ad
1	0-4	-8	5	20-24	-4	9	45-49	+1	13	65-69	+5
2	5-9	-7	6	25-29	-3	10	50-54	+2	14	70-74	+6
3	10-14	-6	7	30-34	-2	11	55-59	+3	15	75-79	+7
4	15-19	-5	8	35-39	-1	12	60-64	+4	16	80+	+8

In order to construct the 2nd degree polynomial function, define:

$$X^0_{i(t)} = (p_{1\ i(t)}) + \ldots + (p_{16\ i(t)}) \qquad (29)$$

$$X^1_{i(t)} = (ad_1)\ (p_{1\ i(t)}) + \ldots + (ad_{16})\ (p_{16\ i(t)}) \qquad (30)$$

$$X^2_{i(t)} = (ad_1)^2\ (p_{1\ i(t)}) + \ldots + (ad_{16})^2\ (p_{16\ i(t)}) \qquad (31)$$

Now, instead of having to estimate 16 coefficients (one for each age group), it is enough to estimate only the 3 coefficients (a_0, a_1 and a_2) for the polynomial function

$$X = a_0\ X^0 + a_1\ X^1 + a_2\ X^2 \qquad (32)$$

Table 2 presents the results of the regression

$$yy_{i(t)} = [constant]_i - \log\ (y_{i(t)}) + \qquad (33)$$

$$+ a_0\ X^0 + a_1\ X^1 + a_2\ X^2 + \varepsilon \qquad (34)$$

In order to control for country-specific effects, we include in the regression 118 country dummies (for all countries, except United States). The estimated values of these dummies are not reported in Table 2.

Table 2. The Results of the Regression

			Coefficient	t-statistic
Dependent Var.	yy	constant	3.1331	11.9139
Number of Obs.	595	log (y)	-0.3248	-11.8168
Adjusted R^2	0.408	f_0	2.2974	5.8780
		f_1	0.1411	1.1548
		f_2	-0.0275	-1.3852

Using the estimated values of the 3 polynomial coefficients, we can construct the 16 productivity coefficients (β_1, ... ,β_{16}). Even better, we can construct the general function that relates productivity to age. In order to do this, each age-group is assumed to represent the age at its middle and the age-group *80+* is assumed to represent the age *82.5*. In addition, we calculate a one-standard-error interval, using the variance-covariance matrix of the estimated coefficients a_0, a_1 and a_2. The results of this construction are presented in Chart 1. The continuous line describes the estimated relative productivity at each age, in the age range [2-82]. The dashed lines represent a one-standard-error deviation.

The estimated productivity coefficients confirm the expected "inverse-U" shape. The peak in productivity is achieved at age *55*. The productivity at this age is *2.48*, compared to an average productivity of *1*. The net productivity becomes positive at age *8*. Children at age *7* and below have a negative net productivity.

VI. Creating Two New Panel Databases

Using the estimated coefficients for the age-groups and the demographic database, we construct a new panel database, describing the effective labor supply in each one of the countries for each one of the periods that are covered by the demographic sample. Many countries in the sample had a pattern of demographic dynamics in which the effective labor supply first decreased and later increased. 1/ For example, the effective labor supply in the United States decreased from 1.39 in 1950 to 1.32 in 1965. After 1965 it started to increase, reaching 1.48 in 1985. These effects correspond, of course, to the dynamics of the baby boom generation. From 1950 to 1965 the fraction of young children in the population increased, having a negative effect on average labor productivity. After 1965, as the baby boom generation advanced into the more productive ages, the demographic dynamics had a positive effect on growth. The cross-section results are equally interesting. In 1985, for example, the most favorable demographic situation was in West Germany (1.65), while the most unfavorable was in Kenya (0.77).

An obvious use of this database is to correct the measured growth rates for the demographic effects. As an example, Chart 2 presents the measured growth rates of income per person for the United States during the period 1950-1985, and the same rate after we adjust for the effect of the demographic dynamics during this period, assuming a labor share of 2/3. In each 5-year interval there is a significant difference (sometimes as large as 0.3 percent per year) between the two rates.

1/ The effective labor supply is a relative measure, and should be compared to the value *1*, which is the effective labor supply that corresponds to the average demographic distribution in the sample.

According to the effective labor supply database, some of the countries in the sample had demographic dynamics with particularly strong effects on output. For example, the effective labor supply in Puerto Rico, Japan, Singapore and Mauritius increased dramatically during the period 1950-85, while in Kenya, Benin, Cape Verde and Bangladesh it decreased significantly during the same period. In all these cases, the absolute value of the rate of change in the effective labor supply was close to 1 percent per year. Adjusting for demographic effects (assuming that the share of labor in income is 2/3), the estimated growth rate of output per person changes (in absolute value) by about 0.6 percent per year for each one of these countries. This is an extremely significant correction, given the 35-year period considered. We can thus create a complete panel database, including 119 countries at 6 points in time (from 1960 to 1985, every 5 years). For each observation the database includes 3 variables: population size, measured GDP per person and adjusted GDP per person, a measure of output that is free of demographic dynamics. 1/

VII. Conclusions

The demographic dynamics and their relations to the dynamics of economic growth are little understood by growth economists. From a theoretical perspective, the convenient assumptions of constant population or constant population growth in models of economic growth are unrealistic and misleading. From an empirical perspective, the effects of demographic dynamics can have dramatic effects on measured growth rates. Having better measures of economic growth is obviously extremely important for improving our understanding in this area, as well as for direct policy applications.

This paper attempts to improve the empirics of economic growth, by taking full account of the effect that demographic dynamics have on economic growth. The methodology used in this paper is unique, in the sense that it relies on macro data, rather than micro data.

One of the intermediate results of the study presented in this paper, that has its own importance, is a function that describes how productivity of labor varies with age. Another important result is a panel database of effective labor supply per person. This database results from estimating the effects of demographic dynamics on economic growth, and is used in the construction of growth rates that are free of demographic effects.

1/ Both databases described in this section, the "effective labor supply" (ELS) database and the "adjusted for demographic dynamics" (ADD) database, are in Ascii IBM-format and are available upon request.

Chart 1
Productivity at each age

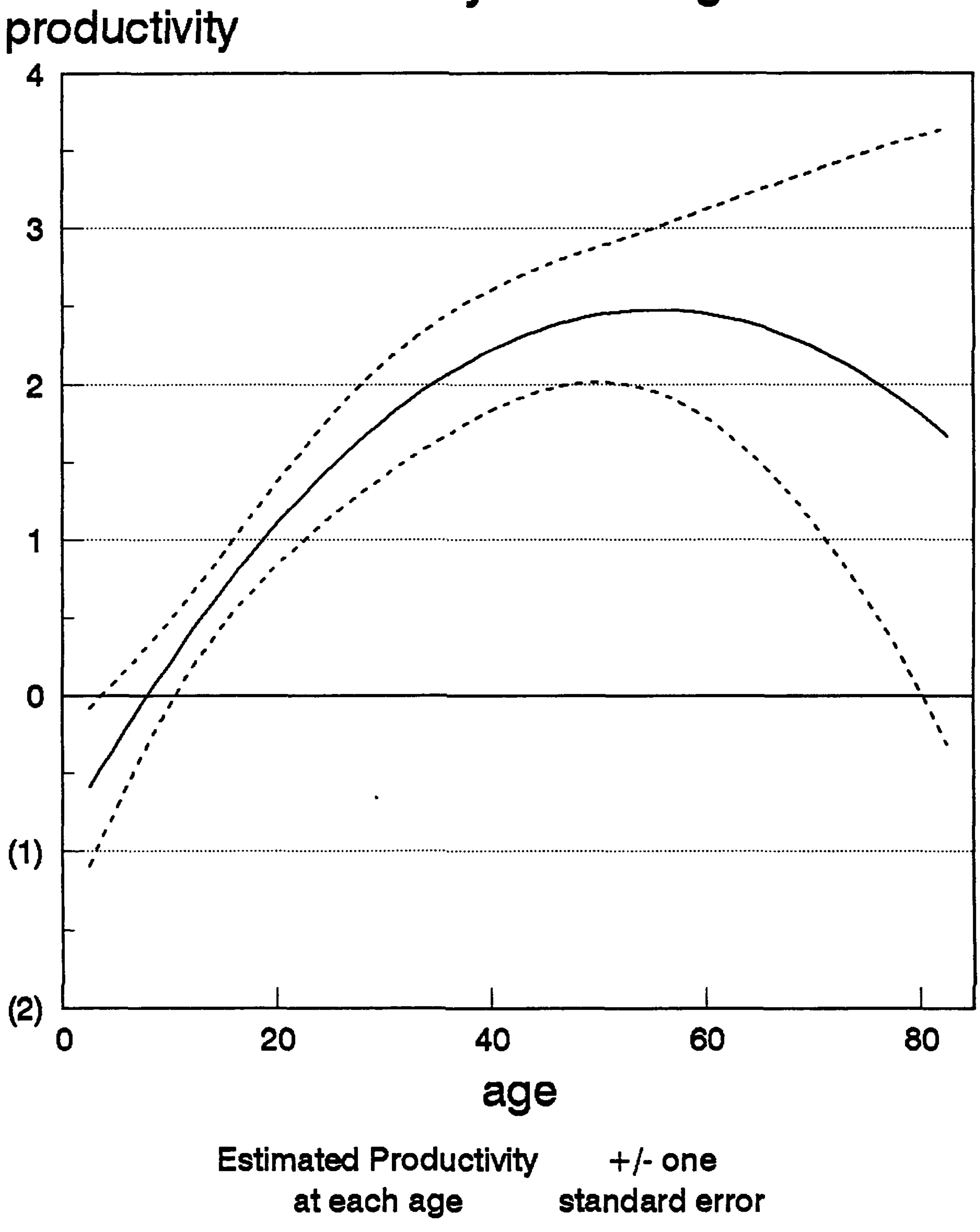
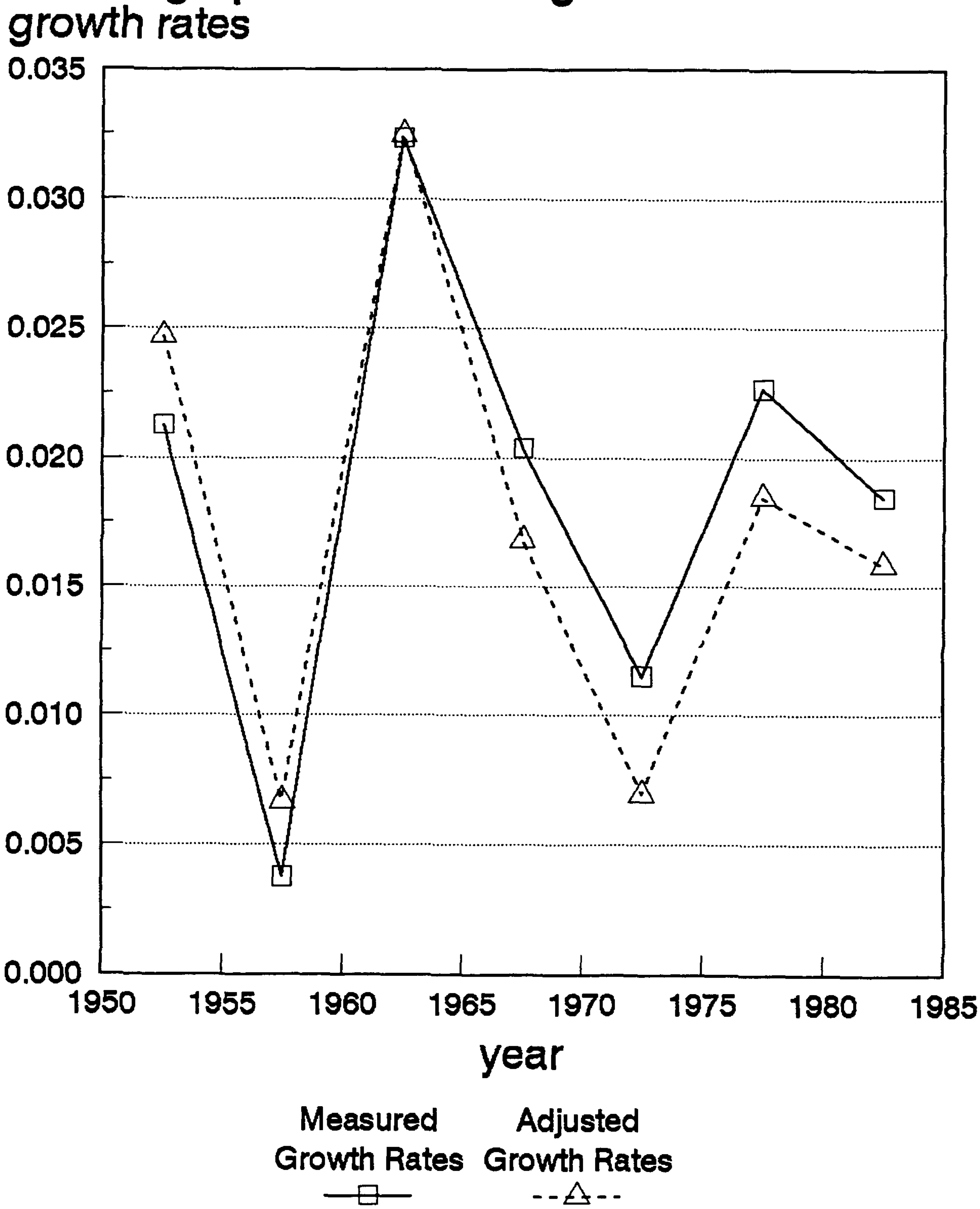


Chart 2
Demographic effects on growth in the U.S.



The Complete List of Countries

(pwt# represents the country number in the PWT-5.5 database)

ser#	*pwt#*	*Country*	*ser#*	*pwt#*	*Country*
1	1	Algeria	31	32	Namibia
2	2	Angola	32	33	Niger
3	3	Benin	33	34	Nigeria
4	4	Botswana	34	35	Reunion
5	5	Burkina Faso	35	36	Rwanda
6	6	Burundi	36	37	Senegal
7	7	Cameroon	37	40	Somalia
8	8	Cape Verde Is.	38	41	South Africa
9	9	Central Afr. Rep.	39	43	Swaziland
10	10	Chad	40	44	Tanzania
11	11	Comoros	41	45	Togo
12	12	Congo	42	46	Tunisia
13	14	Egypt	43	47	Uganda
14	15	Ethiopia	44	48	Zaire
15	16	Gabon	45	49	Zambia
16	17	Gambia	46	50	Zimbabwe
17	18	Ghana	47	52	Barbados
18	19	Guinea	48	54	Canada
19	20	Guinea-Biss	49	55	Costa Rica
20	21	Ivory Coast	50	57	Dominican Rep.
21	22	Kenya	51	58	El Salvador
22	23	Lesotho	52	60	Guatemala
23	24	Liberia	53	61	Haiti
24	25	Madagascar	54	62	Honduras
25	26	Malawi	55	63	Jamaica
26	27	Mali	56	64	Mexico
27	28	Mauritania	57	65	Nicaragua
28	29	Mauritius	58	66	Panama
29	30	Morocco	59	67	Puerto Rico
30	31	Mozambique	60	70	Trinidad & Tobago

The Complete List of Countries (Concluded)

ser#	pwt#	Country	ser#	pwt#	Country
61	71	U.S.A.	91	110	Syria
62	72	Argentina	92	112	Thailand
63	73	Bolivia	93	115	Austria
64	74	Brazil	94	116	Belgium
65	75	Chile	95	118	Cyprus
66	76	Colombia	96	119	Czechoslovakia
67	77	Ecuador	97	120	Denmark
68	78	Guyana	98	121	Finland
69	79	Paraguay	99	122	France
70	80	Peru	100	123	Germany, West
71	81	Suriname	101	124	Greece
72	82	Uruguay	102	126	Iceland
73	83	Venezuela	103	127	Ireland
74	85	Bangladesh	104	128	Italy
75	88	*Hong Kong*	105	129	Luxembourg
76	89	India	106	130	Malta
77	90	Indonesia	107	131	Netherlands
78	91	Iran	108	132	Norway
79	92	Iraq	109	134	Portugal
80	93	Israel	110	136	Spain
81	94	Japan	111	137	Sweden
82	95	Jordan	112	138	Switzerland
83	96	Korea, Rep.	113	139	Turkey
84	99	Malaysia	114	140	U.K.
85	101	Myanmar	115	142	Yugoslavia
86	102	Nepal	116	143	Australia
87	104	Pakistan	117	144	Fiji
88	105	Philippines	118	145	New Zealand
89	108	Singapore	119	146	Papua New Guinea
90	109	Sri Lanka			

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