



INSTITUTE OF SOUTHEAST ASIAN STUDIES

# **Labour Force Projections for Singapore 1980-2070**

Saw Swee-Hock

**LABOUR FORCE PROJECTIONS  
FOR SINGAPORE  
1980-2070**

**by**

**Saw Swee-Hock**

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INTRODUCTION

This monograph presents the detailed results of the computation of the labour force projections for Singapore by sex, quinary age group from age 10 to 80 and over, and by time-intervals of five years from 1980 to 2070. Two sets of projections have been prepared to provide figures for two alternative future courses of labour force trends, and they are designated as Projection A and Projection B. A description of the methodology utilized to prepare these labour force projections and a brief analysis of the results of the computation are also presented. The labour force projections serve to provide the prerequisite data for studying the size and age structure of the labour force in the future. An understanding of the future labour force will facilitate the formulation of appropriate labour policies to ensure the sustained growth of the Singapore economy in the context of the tight labour market situation prevailing indefinitely in the years ahead.

## II

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### METHODOLOGY

The preparation of labour force projections entails two separate exercises, the first involving the construction of the population projections and the second the calculation of the future labour force by the application of the labour force participation rates to the computed population projections. The results of the work in the first stage, together with an account of the methodology used, have been published recently in Population Projections for Singapore, 1980-2070, Research Notes and Discussions Paper No. 39 (Singapore: Institute of Southeast Asian Studies, 1983). What we need to do is to proceed to the second stage by applying the age-specific labour force participation rates to the two sets of population projections by quinary age-group already prepared to give us the corresponding two sets of labour force projections. It should be noted that the computations are executed for each sex separately.

In computing the two sets of labour force projections, certain assumptions were adopted for Projection A and for Projection B.

### PROJECTION A

#### Migration

It is assumed that the population and hence the labour force of Singapore are not subjected to international migration. In other words, during the whole period of projection from 1980 to 2070 we have assumed that there will be no immigration and emigration.



### Mortality

It is assumed that the 1979-81 mortality level with a life expectancy at birth of 68.4 years for the males and 74.3 years for the females will improve over time to a life expectancy of 72.6 for the males by 2040 and a life expectancy of 75.2 by 2005 for the females.

### Fertility

It is assumed that the gross reproduction rate will rise from 0.841 in 1980 to 0.939 in 1985 and to 1.025 in 1990, after which it will remain constant at this replacement fertility level until 2070.

### Participation Rates

It is assumed that the age-specific labour force participation rates for each sex derived from the 1980 Census of Population will remain unchanged during the whole period of projection.

## PROJECTION B

### Migration

The assumption in respect of international migration is the same as that used in Projection A.

### Mortality

The assumption in respect of mortality is the same as that used in Projection A.

### Fertility

It is assumed that the gross reproduction rate will remain constant below the replacement fertility level at the 1980 rate of 0.841 throughout the whole period of projection.

### Participation Rates

The assumption regarding age-specific labour force participation rates is the same as that adopted for Projection A.

The data pertaining to the 1980 base labour force classified by sex and quinary age group are obtained from the Population Census conducted in June 1980. The figures are given in Census of Population, Release No. 4, Economic Characteristics, published by the Department of Statistics, Singapore. The labour force or economically active population is defined to include those working during the reference week as well as those not working during the reference week but actively looking for work during the week.

The population classified by sex and quinary age group and the labour force by sex and similar age grouping enumerated in the 1980 Population Census have been used to compute the age-specific labour force participation rates by sex. These rates used to compute the labour force projections are given in Table 1.

TABLE 1  
Age-Specific Labour Force Participation Rates  
by Sex, 1980

Age Group	Male	Female
10-14	1.642	1.651
15-19	47.490	50.735
20-24	93.351	78.397
25-29	97.227	58.666
30-34	97.941	44.201
35-39	98.027	37.132
40-44	97.618	33.156
45-49	95.723	26.466
50-54	89.568	20.431
55-59	70.691	14.499
60-64	52.532	11.303
65-69	38.623	9.479
70-74	25.134	6.218
75-79	15.897	3.411
80 & Over	8.447	1.298

### III

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#### FUTURE LABOUR FORCE

The detailed results of the computation for Projection A and Projection B are presented in Tables 3 to 8, while a summary of the results are provided in Table 2. According to Projection A the labour force is expected to grow from 1,115,958 in 1980 to 1,384,396 in the year 2000 and to the peak of 1,516,608 in 2015. Thereafter, a reversal takes place as it declines to 1,486,822 in 2030, after which it fluctuates only slightly around the 1.5 million level right up to 2070. In absolute terms, the increase in the labour force during the first five-year period 1980-85 will amount to 108,819, but this will shrink to 71,417 during 1985-90 and 45,850 during 1990-95. The increase will remain substantial up to 2010, followed by a further shrinkage to 21,884 during 2010-15 and even a decrease during the next 3 five-year periods.

The figures for Projection B also shown in Table 2 seem to reveal a completely different trend in the future labour force. The labour force is expected to grow from 1,115,958 in 1980 to the peak of 1,428,808 in 2010, after which it will decline without fail until it touches the low of 989,609 in 2070. The absolute increase will shrink consistently from 108,819 during 1980-85 to 15,987 during 2005-10, and for the rest of the period there will be a decrease instead of an increase. Projection B demonstrates that if fertility persists below the replacement level the decline in the labour force will also accompany the decline in the population. This is not surprising because labour force supply is essentially a function of the size of the population. Another point worth mentioning is that the detailed figures by quinary age group given in Tables 3 to 8 show that an ageing of the labour force will also take place as the population ages during the years ahead.

TABLE 2  
Projected Labour Force, 1980-2070

Year	Projection A			Projection B		
	Labour Force	Increase		Labour Force	Increase	
		Number	%		Number	%
1980	1,115,958	-	-	1,115,958	-	-
1985	1,224,777	108,819	9.75	1,224,777	108,819	9.75
1990	1,296,194	71,417	5.83	1,296,194	71,417	5.83
1995	1,342,044	45,850	3.54	1,341,844	45,650	3.52
2000	1,384,396	42,352	3.16	1,377,819	35,975	2.68
2005	1,442,347	57,951	4.19	1,412,821	35,002	2.54
2010	1,494,724	52,377	3.63	1,428,808	15,987	1.13
2015	1,516,608	21,884	1.46	1,415,012	-13,796	-0.97
2020	1,508,285	-8,323	-0.55	1,376,150	-38,862	-2.75
2025	1,492,298	-15,987	-1.06	1,328,769	-47,381	-3.44
2030	1,486,822	-5,476	-0.37	1,284,240	-44,529	-3.35
2035	1,496,464	9,642	0.65	1,246,343	-37,897	-2.95
2040	1,509,312	12,848	0.86	1,209,854	-36,489	-2.93
2045	1,512,963	3,651	0.24	1,169,706	-40,148	-3.32
2050	1,508,071	-4,892	-0.32	1,127,200	-42,506	-3.63
2055	1,503,081	-4,990	-0.33	1,085,887	-41,313	-3.67
2060	1,504,072	991	0.07	1,058,284	-27,603	-2.54
2065	1,506,457	2,385	0.16	1,023,760	-34,524	-3.26
2070	1,508,241	1,784	0.12	989,609	-34,151	-3.34

TABLE 3  
Projected Total Labour Force by Age Group, 1980-2070  
(Projection A)

Age Group	1980	1985	1990	1995	2000
10-14	3,879	3,680	3,176	3,723	4,311
15-19	141,012	115,299	109,463	94,491	110,783
20-24	255,060	246,503	201,513	191,625	165,642
25-29	198,636	231,515	223,803	182,935	174,299
30-34	150,981	180,586	210,919	203,963	166,605
35-39	92,359	142,679	170,835	199,805	193,197
40-44	86,457	88,363	136,643	163,844	191,857
45-49	66,306	79,152	81,011	125,582	150,893
50-54	52,437	57,478	68,639	70,495	109,619
55-59	31,135	38,057	41,872	50,202	51,765
60-64	19,033	20,953	25,663	28,444	34,318
65-69	11,592	12,163	13,496	16,682	18,656
70-74	4,992	5,712	6,040	6,790	8,508
75-79	1,616	2,017	2,323	2,502	2,854
80 & over	463	620	798	961	1,089
Total	1,115,958	1,224,777	1,296,194	1,342,044	1,384,396

TABLE 3 (Continued)  
Projected Total Labour Force by Age Group, 1980-2070  
(Projection A)

Age Group	2005	2010	2015	2020	2025
10-14	4,323	3,936	3,649	3,661	3,921
15-19	128,261	128,621	117,106	104,563	108,925
20-24	194,015	224,626	225,256	205,090	190,127
25-29	150,851	176,465	204,305	204,878	186,537
30-34	158,926	137,682	160,894	186,277	186,800
35-39	157,753	150,578	130,522	152,440	176,489
40-44	185,503	151,437	144,604	125,383	146,381
45-49	177,058	171,177	139,689	133,473	115,794
50-54	132,100	155,518	150,659	122,908	117,500
55-59	80,806	97,732	115,471	112,214	91,530
60-64	35,572	55,790	67,764	80,399	78,455
65-69	22,678	23,633	37,262	45,497	54,220
70-74	9,620	11,809	12,407	19,711	24,240
75-79	3,622	4,147	5,147	5,465	8,770
80 & over	1,259	1,573	1,873	2,326	2,609
Total	1,442,347	1,494,724	1,516,608	1,508,285	1,492,298

TABLE 3 (Continued)  
Projected Total Labour Force by Age Group, 1980-2070  
(Projection A)

Age Group	2030	2035	2040	2045	2050
10-14	4,119	4,082	3,909	3,803	3,849
15-19	116,677	122,564	121,434	116,293	113,131
20-24	190,762	204,351	214,648	212,670	203,667
25-29	172,927	173,506	185,879	195,229	193,431
30-34	170,076	157,667	158,196	169,488	178,002
35-39	176,984	161,140	149,382	149,884	160,587
40-44	169,483	169,959	154,744	143,453	143,935
45-49	135,112	156,435	156,873	142,828	132,407
50-54	101,983	118,942	137,712	138,098	125,734
55-59	87,526	75,983	88,599	102,580	102,868
60-64	64,257	61,434	53,325	62,188	72,002
65-69	53,158	43,544	41,613	36,107	42,125
70-74	29,087	28,729	23,697	22,787	19,769
75-79	10,896	13,213	13,181	10,971	10,552
80 & over	3,775	4,915	6,120	6,584	6,012
Total	1,486,822	1,494,464	1,509,312	1,512,963	1,508,071

TABLE 3 (Continued)  
Projected Total Labour Force by Age Group, 1980-2070  
(Projection A)

Age Group	2055	2060	2065	2070
10-14	3,971	3,909	4,003	3,928
15-19	114,517	118,139	116,401	119,084
20-24	198,129	200,556	206,901	203,076
25-29	185,242	180,205	182,412	188,183
30-34	176,362	168,897	164,302	166,316
35-39	168,648	167,095	160,021	155,668
40-44	154,217	161,955	160,463	153,670
45-49	132,851	142,348	149,485	148,108
50-54	116,560	116,952	125,316	131,595
55-59	93,657	86,824	87,116	93,347
60-64	72,204	65,739	60,942	61,147
65-69	48,772	48,909	44,531	41,281
70-74	23,066	26,707	26,782	24,384
75-79	9,157	10,682	12,368	12,403
80 & over	5,728	5,155	5,414	6,051
Total	1,503,081	1,504,072	1,506,457	1,508,241



TABLE 4  
Projected Male Labour Force by Age Group, 1980-2070  
(Projection A)

Age Group	1980	1985	1990	1995	2000
10-14	1,985	1,898	1,649	1,918	2,221
15-19	70,397	57,217	54,765	47,620	55,381
20-24	142,670	137,660	111,943	107,274	93,362
25-29	125,818	147,672	142,573	116,089	111,348
30-34	105,157	125,931	147,983	142,988	116,427
35-39	67,523	104,387	125,159	147,209	142,240
40-44	64,913	66,368	102,715	123,353	145,231
45-49	52,414	62,189	63,686	98,827	118,963
50-54	43,281	47,003	55,839	57,399	89,366
55-59	26,148	31,809	34,708	41,426	42,769
60-64	15,652	17,305	21,083	23,174	27,842
65-69	9,168	9,601	10,717	13,179	14,607
70-74	3,878	4,362	4,603	5,221	6,516
75-79	1,249	1,546	1,748	1,883	2,178
80 & over	353	478	614	732	828
Total	730,606	815,426	879,785	928,292	969,279