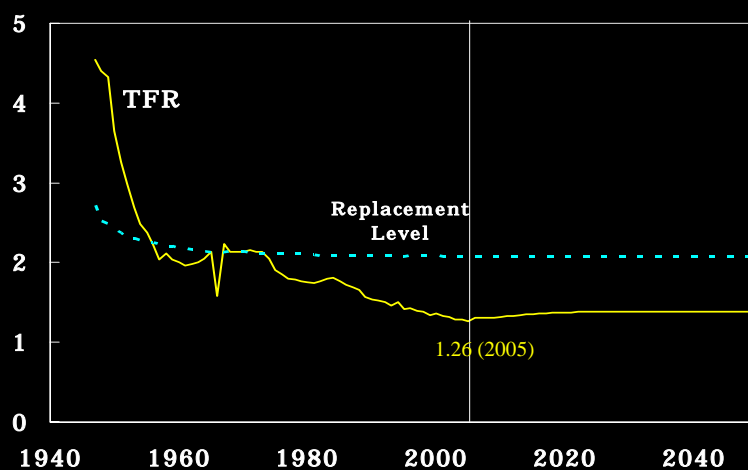


# Lowest-Low Fertility and Governmental Actions in Japan

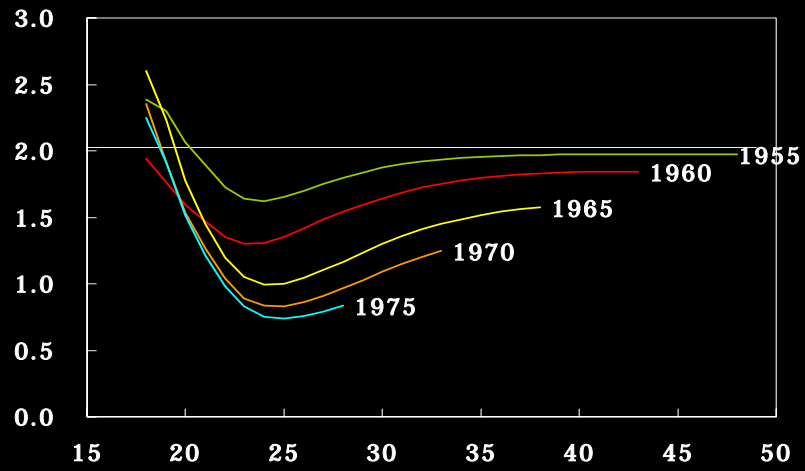
Toru Suzuki

National Institute of Population and Social Security Research  
Tokyo, Japan

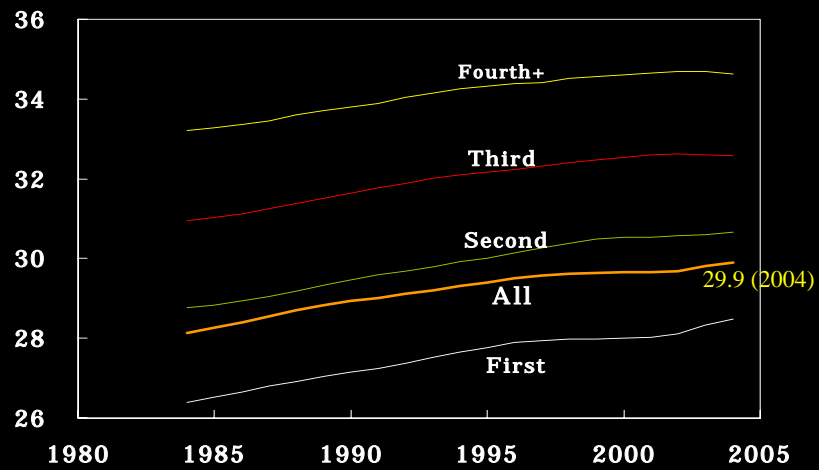
Total Fertility Rate and Replacement Level: 1947-2050



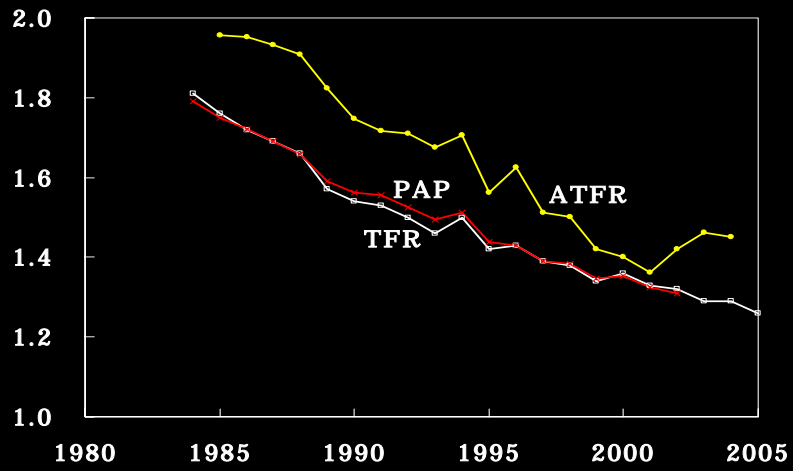
Cohort Cumulative Fertility Relative to 1950 Cohort



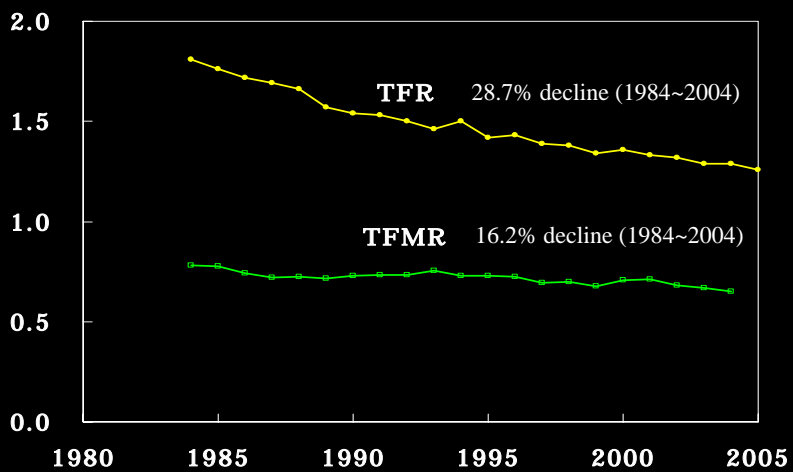
Mean Age at Birth by Birth Order



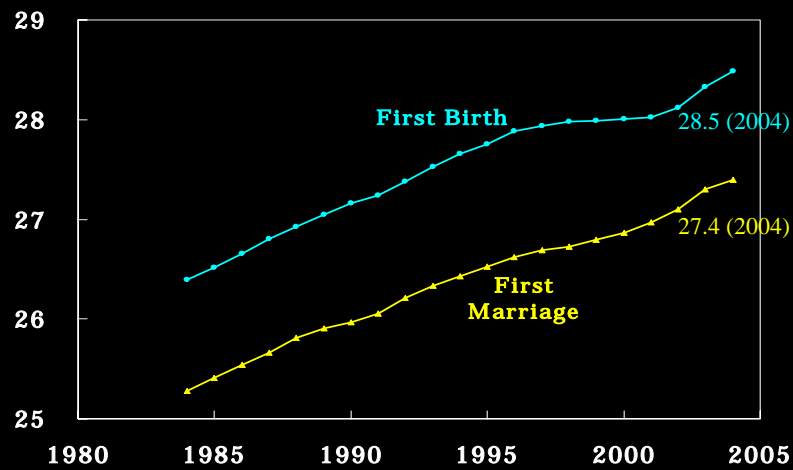
### Fertility Decline with Different Measures



### Female TFMR and TFR



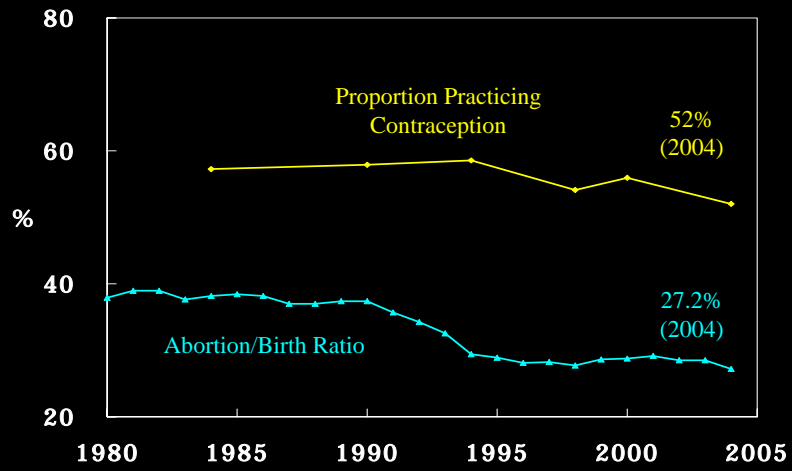
## Female Mean Age at Marriage and First Birth



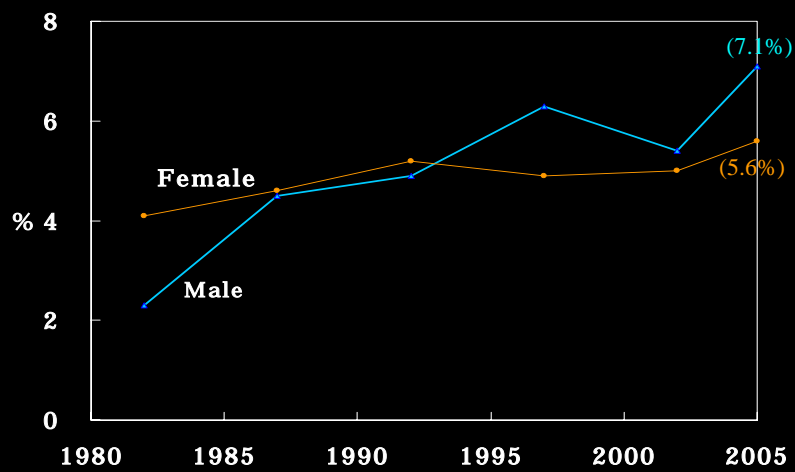
## Contribution of Nuptiality to Fertility Decline

| Literature      | Period    | Contribution of Nuptiality |
|-----------------|-----------|----------------------------|
| Ogawa (1998)    | 1990~1995 | <40%                       |
| Hirosima (1999) | 1974~1997 | 40%                        |
| Hirosima (2000) | 1970~2000 | 70%                        |
| Iwasawa (2002)  | 1970~2000 | 70%                        |
| Kaneko (2004)   | 1980~2000 | 73.7%                      |
| Suzuki (2005)   | 1990~2002 | 37%                        |

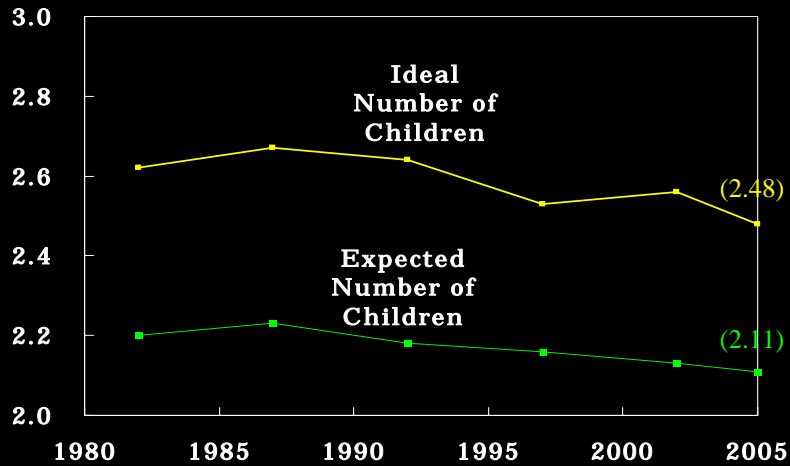
## Contraception and Induced Abortion



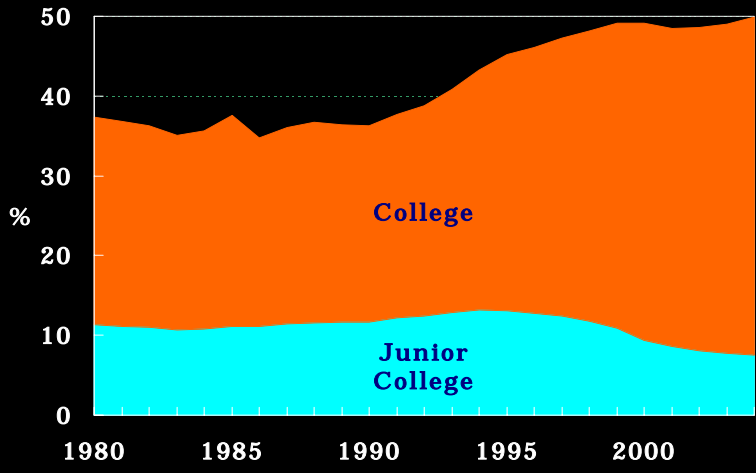
## “No Intention of Marriage”



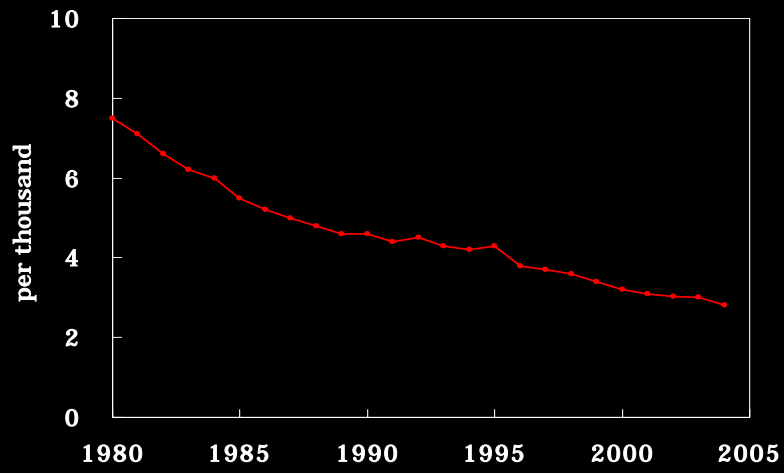
# Demand for Children



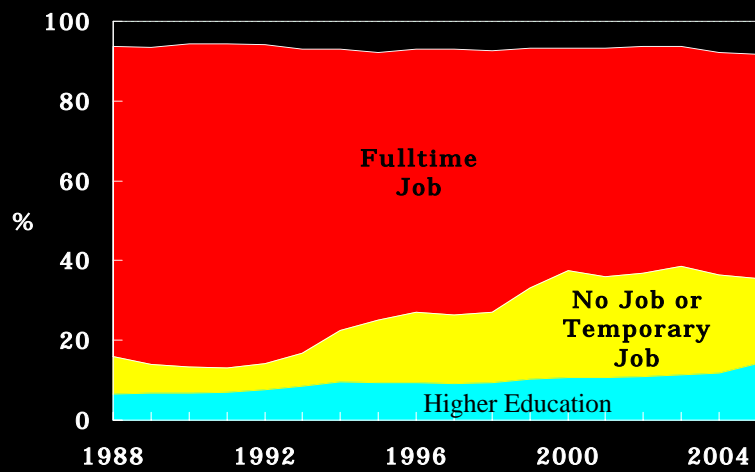
# College Enrollment



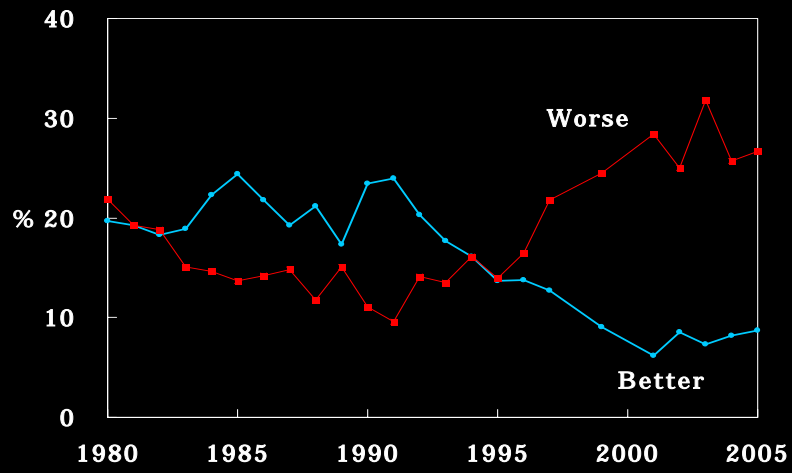
## Infant Mortality Rate



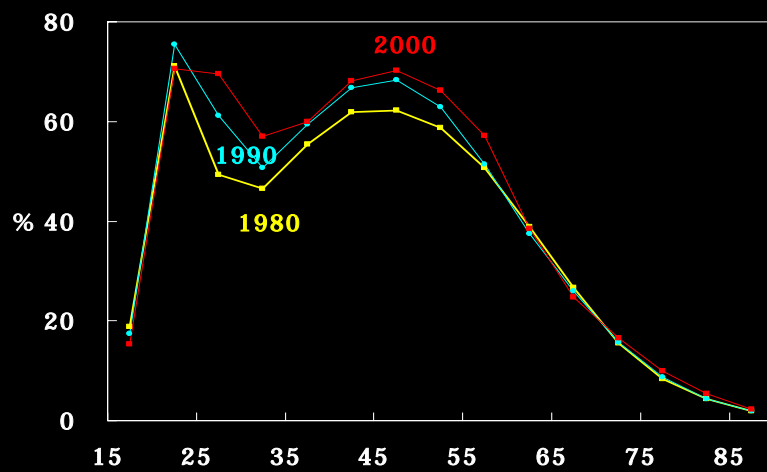
## States of College Graduates



### Expectation on Future's Life



### Female Labor Force Participation by Age





## Pronatal Policy Interventions in Japan

| Year | Policy Measures   |
|------|---|
| 1991 | Government's Guideline "Toward Satisfactory Conditions for Healthy Childbearing"<br>Amendments to Child Allowance Law<br>Childcare Leave Law                        |
| 1994 | Angel Plan (1994~1999)<br>Amendments to Childcare Leave Law   |
| 1997 | Amendments to Child Welfare Law   |
| 1999 | New Angel Plan (1999~2004)  |
| 2000 | Amendments to Childcare Leave Law<br>Amendments to Child Allowance Law  |
| 2002 | Ministry of Health "Measures for Decreasing Children Plus One"  |
| 2003 | Law for Measures to Support the Development of the Next Generation<br>Law for Measures to Cope with Decreasing Children Society<br>Amendment to Child Allowance Law |
| 2004 | Support Plan for Parents and Children (2004~2009)   |
| 2006 | New Low-Fertility Policy  |

## Child Allowance for a Family with Two Children

Japan

10,000 yen/month, 85%, 9.5 years

France

113 euro/month, 100%, 20 years

Sweden

1900 krona/month, 100%, 16 years

## Effectiveness of Child Allowance

| Literature                   | Yamagami<br>(1999) | Oyama<br>(2004)     | Morita<br>(2006)    |
|------------------------------|--------------------|---------------------|---------------------|
| Definition of husband income | 10,000 Yen / year  | 10,000 Yen / month  | (standardized)      |
| Coefficient                  | 0.00244            | 0.01                | 0.043               |
| To raise TFR by 0.1          | 34,000 Yen / month | 100,000 Yen / month | 946,000 Yen / month |

## Coefficients in Equations for Log-Odds Ratio

$$\exp(b) = \frac{f_1}{1-f_1} \bigg/ \frac{f_0}{1-f_0}, \quad b: \text{Partial Regression Coef.}$$

$f_0$ : Fertility of Women Who **Cannot** Take Childcare Leave

$f_1$ : Fertility of Women Who **Can** Take Childcare Leave

$$TFR = 35\{(1-p)f_0 + pf_1\}, \quad p: \text{Proportion of Women Who Can Take Childcare Leave}$$

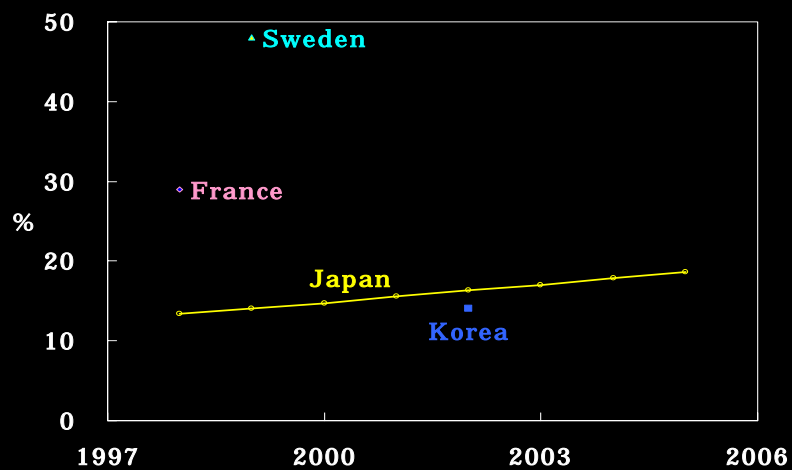
$$(1-p)(1-e^{-b})f_0^2 + \{p+(1-p)e^{-b} - \frac{TFR}{35}(1-e^{-b})\}f_0 - \frac{TFR}{35}e^{-b} = 0.$$

## Effectiveness of Childcare Leave

TFR=1.29,  $p=0.092$

|                        | Sugiura&<br>Nishimoto | Shigeno&<br>Mutsuura | Yamaguchi | Suruga&<br>Chang |
|------------------------|-----------------------|----------------------|-----------|------------------|
| $\exp(b)$              | 1.0234                | 1.1325               | 1.2076    | 1.2498           |
| $f_0$                  | 0.0368                | 0.0364               | 0.0632    | 0.0361           |
| $f_1$                  | 0.0376                | 0.0411               | 0.0434    | 0.0447           |
| Current $p$            | 0.092                 | 0.092                | 0.092     | 0.092            |
| To raise TFR<br>by 0.1 | impossible            | 0.424                | 0.709     | 0.490            |

## Proportion of Children Aged 0-2 Enrolled in Daycare Center



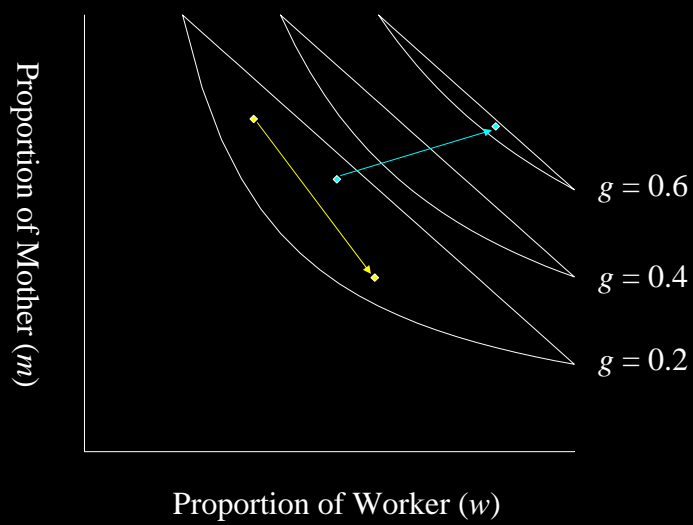
## Simple Model of Compatibility

|            | Not Mother      | Mother  |         |
|------------|-----------------|---------|---------|
| Not Worker | $1 - w - m + g$ | $m - g$ | $1 - w$ |
| Worker     | $w - g$         | $g$     | $w$     |
|            | $1 - m$         | $m$     | $1$     |

$$1 - w - m + g > 0,$$

$$g < w m.$$

## Area of Negative Correlation at Micro Level



### Proportion of Working Mothers (*g*)

|           | 1997  | 2004  |
|-----------|-------|-------|
| Age 25~29 | 17.4% | 21.2% |
| Age 30~34 | 31.4% | 30.2% |
| Age 35~39 | 48.2% | 46.7% |

(Employment Status Survey)

### Coefficients of Daycare Services

|   | <i>b</i> | <i>t</i> |
|---|----------|----------|
| (Shigeno and Ohkusa, 1999)                |          |          |
| Availability of overall services          | -0.44    | -0.26    |
| Availability of morning service           | -0.78    | -0.46    |
| Availability of night service             | -26.86   | -1.39    |
| Availability of infant service (1 year)   | -7.81    | -0.72    |
| Availability of infant service (6 months) | 17.38    | 1.69     |
| (Shigeno and Matsuura, 2003)              |          |          |
| Evaluation of local daycare services      | 0.43     | 1.19     |

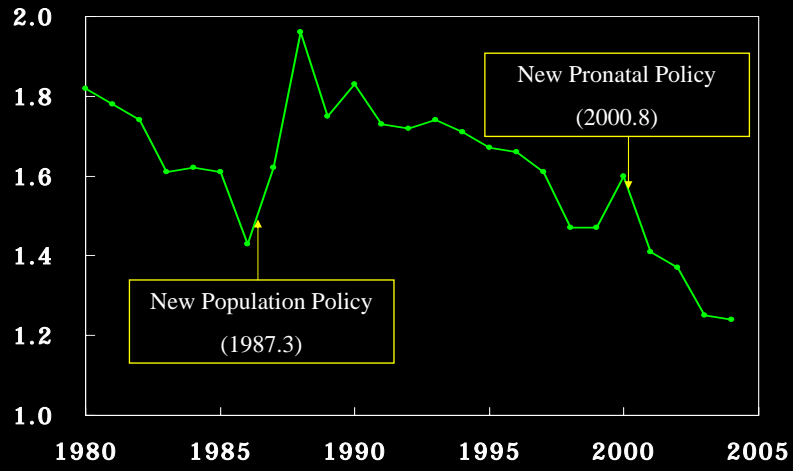
### Lowest-Low Fertility after 2000

|          |                        | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|----------|------------------------|------|------|------|------|------|------|
| Eastern  | Japan                  | 1.36 | 1.33 | 1.32 | 1.29 | 1.29 | 1.26 |
| Asia     | Korea                  | 1.47 | 1.30 | 1.17 | 1.19 | 1.16 | 1.08 |
|          | Taiwan                 | 1.68 | 1.40 | 1.34 | 1.24 | 1.18 | 1.12 |
| Southern | Bosnia-<br>Herzegovina | 1.28 | 1.44 | 1.23 |      |      |      |
| Europe   | Greece                 | 1.27 | 1.25 | 1.27 |      |      |      |
|          | Italy                  | 1.24 | 1.23 | 1.26 | 1.29 |      |      |
|          | Slovenia               | 1.26 | 1.21 | 1.21 | 1.20 |      |      |
|          | Spain                  | 1.24 | 1.26 | 1.27 | 1.30 |      |      |

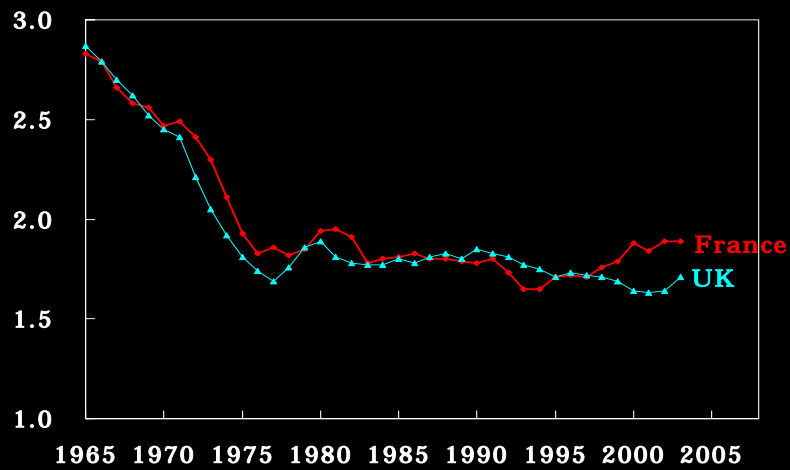
### Lowest-Low Fertility after 2000

|         |                    | 2000 | 2001 | 2002 | 2003 | 2004 |
|---------|--------------------|------|------|------|------|------|
| Eastern | Bulgaria           | 1.30 | 1.24 | 1.21 | 1.23 |      |
| Europe  | Czech Republic     | 1.14 | 1.14 | 1.17 | 1.18 |      |
|         | Hungary            | 1.32 | 1.31 | 1.30 | 1.28 |      |
|         | Poland             | 1.34 | 1.29 | 1.24 | 1.22 |      |
|         | Romania            | 1.31 | 1.27 | 1.26 | 1.27 |      |
|         | Slovak Republic    | 1.30 | 1.20 | 1.19 | 1.20 |      |
| Former  | Armenia            | 1.11 | 1.02 | 1.21 | 1.35 |      |
| USSR    | Latvia             | 1.24 | 1.21 | 1.24 | 1.29 |      |
|         | Lithuania          | 1.39 | 1.30 | 1.24 | 1.26 |      |
|         | Moldova            | 1.30 | 1.25 | 1.21 | 1.22 |      |
|         | Russian Federation | 1.21 | 1.25 | 1.32 | 1.32 |      |
|         | Ukraine            | 1.09 |      | 1.13 | 1.17 |      |

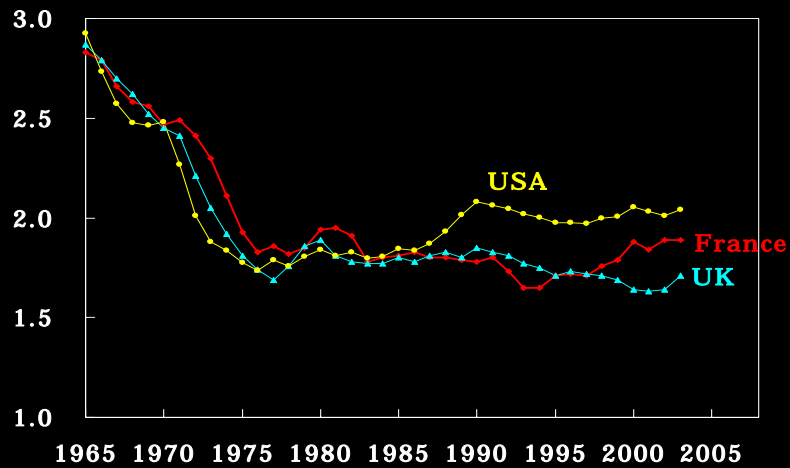
### TFR in Singapore



### TFR in France and UK



## TFR in France, UK and USA



## Cultural Divide





## Distinctive Features of Western and Northern European Family Patterns

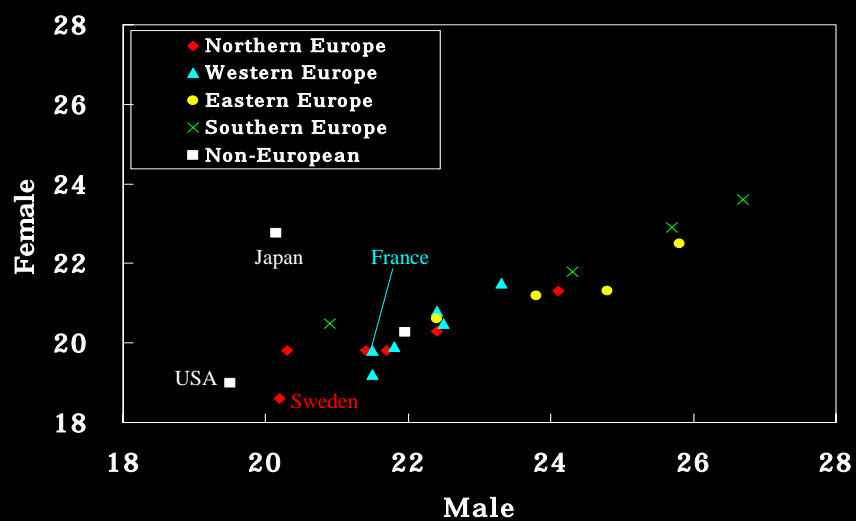
Weak Family Ties

High Position of Women

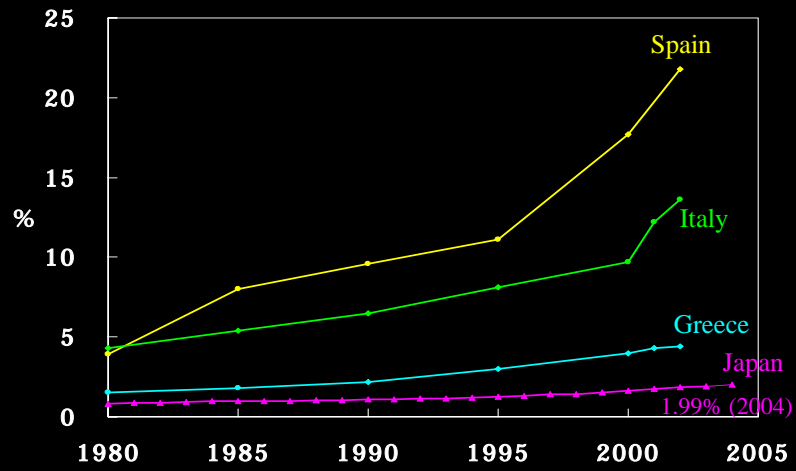
Early Home-Leaving

Cohabitations and Extramarital Births

## Median Age at Home-Leaving



## Proportion of Extramarital Births



## TFR in Eastern Asia

