ABORTION WORLDWIDE REPORT: PART VII

Empirical Findings in Analyses of Reported Abortion Data: Trends for Countries and Regions

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The compilation and analysis of historical abortions for 100 countries and territories enables a number of conclusions to be drawn about abortion trends, their relationship to national policies, and their consequences for those nations. This brief reviews these findings to date. The first section is an overview of the general trends from the 1920s to 2015 A.D., with a few country abortion data graphs serving as examples. Section 2 describes the superposed epoch analysis used in sections 3-7 to draw conclusions from the trends in abortions over time for countries/territories and for groups of countries. Section 8 is a timescale analysis for all countries and territories in this Abortion Worldwide Report (AWR). Section 9 briefly lists conclusions from these empirical findings.

1. General Trends, 1920s to 2015

The general trend for governments that authorized abortion in the 1920s to 1940s was limited authorization, except for the U.S.S.R., which was the first nation to authorize abortion in 1920, and did so for abortion on request. There were 14 other (independent) countries that authorized abortion for limited reasons (except for Japan in 1948) during these three decades, and the people in 13 of those countries (and it appears in most of the Soviet republics), were slow to accept the practice of killing their own children. Sweden is the only one for which the data series is complete from year of authorization, 1938, through 2015, except for two years. Figure 1.1 evidences the slow rise of abortions in Sweden. (See decade-by-decade authorization chronology in Greatest Genocide brief, in this Part VII of the AWR).

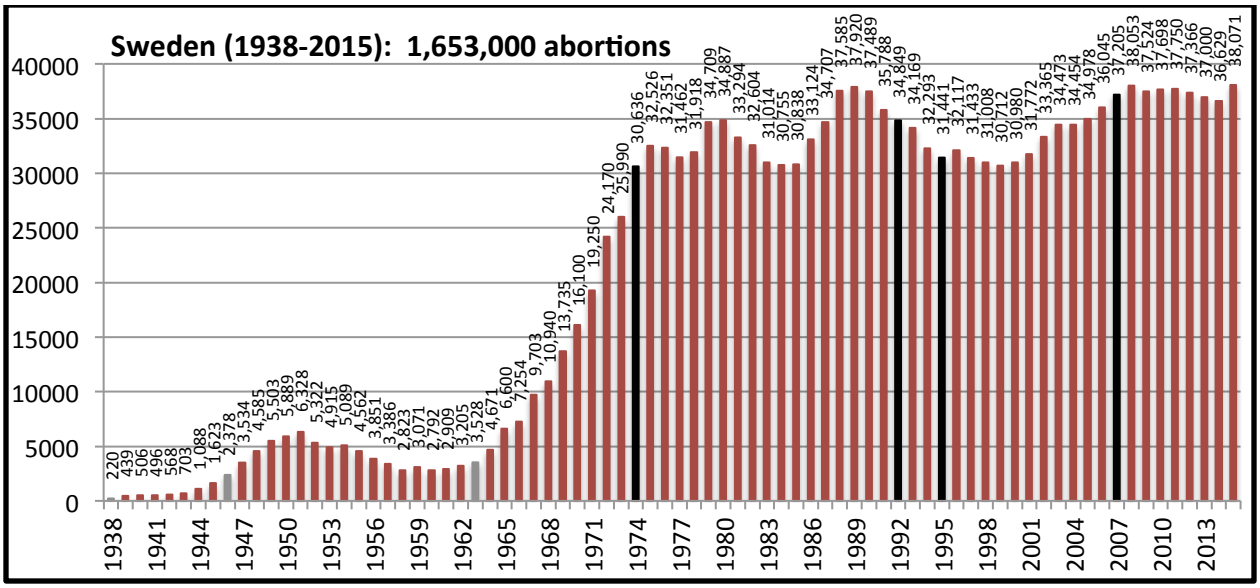

Fig. 1.1. Sweden abortions after authorization in 1938.

Russia and the Ukraine within the U.S.S.R., and Japan, are the only exceptions to this pattern during this early period. For the U.S.S.R., by 1932, abortions in Russia and the Ukraine alone surpassed 1 million, an unprecedented anomaly in history. But when the U.S.S.R. restricted abortion in 1936, reported abortions dropped dramatically until the mid-1950s. In 1948, Japan authorized abortion and witnessed the most dramatic initial rise in abortion of any nation. Fig. 1.2 shows the rapid rise, followed by continuous decline.

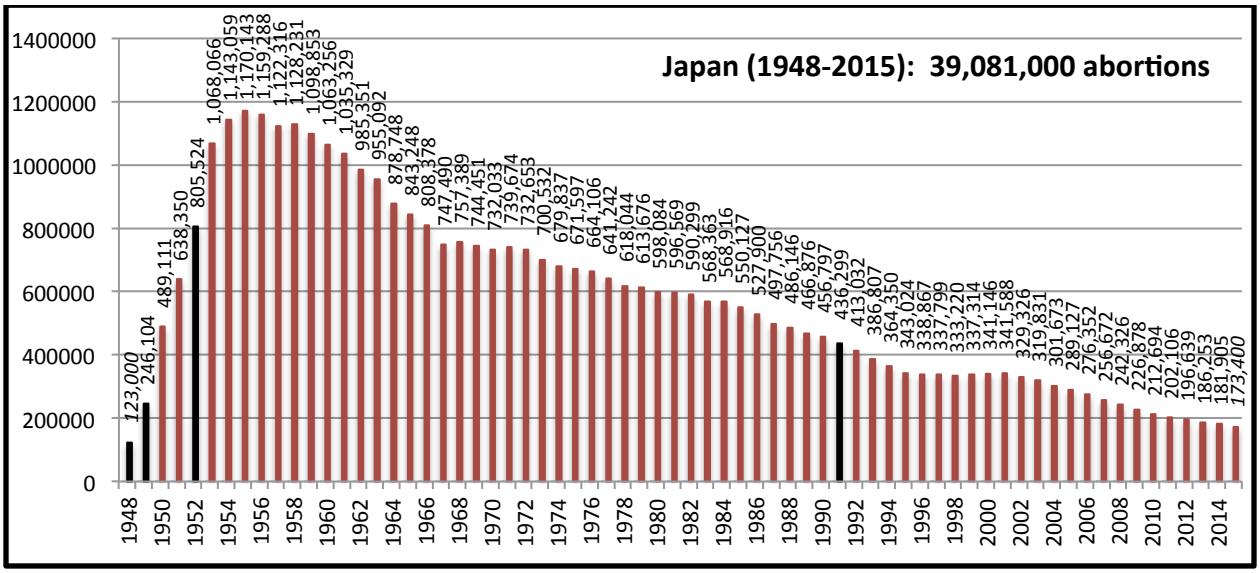

Fig. 1.2. Japan abortions after authorization in 1948.

Abortions increased much more rapidly in most nations that authorized abortion after World War II. Also, abortions increased rapidly in nations that had previously restricted abortion, but removed most or all of those restrictions.

From the 1950s through the 1980s, a total of 90 nations authorized abortion. Of these, 31 were in Europe, 21 in Asia, 20 in Africa, 14 in the Americas and Caribbean (3 subsequently prohibited), and 4 in Oceania. Worldwide abortions increased exponentially during these decades, reaching their highest peak of 27.5 million annually by 1983.

Tunisia was the third nation in Africa (1965) to authorize abortion, but the first on the continent to grant it on request in 1973. Fig. 1.3 shows abortions for Tunisia starting in 1965.

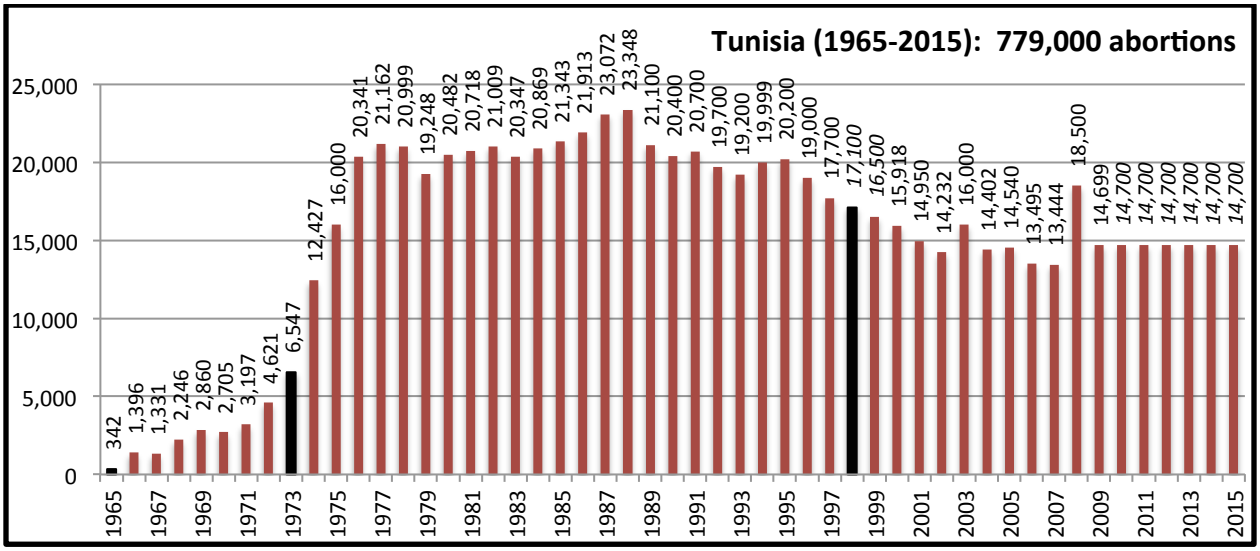

Fig. 1.3. Tunisia abortions after authorizations in 1965 and 1973.

Another nation with a typical pattern for this period, but with unique aspects, is the United States. Constitutionally, abortion was regulated by state governments, and during the 1800s, every one of the 50 states prohibited abortion. Then in 1954, one state partially authorized abortion. Between 1966 and 1972, 19 more states authorized abortion, 16 with restrictions and 3 on request. Then in 1973, the U.S. Supreme Court exceeded its lawful authority in the *Roe* v. *Wade* case, arbitrarily declaring that abortion was a constitutionally-protected right that states could not prohibit. The remaining 30 states were forced to remove their prohibitions. Fig. 1.4 shows the rapid rise in abortions in the United States once many states approved it, and especially when it was approved nationwide.

From the 1990s through 2016, a total of 26 more nations authorized abortion, 12 in Africa, 5 in the Americas and Caribbean, 5 in Asia, 4 in Europe, but none in Oceania.

In summary, the general trend from 1921 through the 1940s was low levels of abortions globally as well as for most nations who authorized it (except for Russia, Ukraine, U.S.S.R., and Japan). The general trend from the 1950s to the early 1990s was rapidly rising or sustained high levels of abortions (except for fluctuations, particularly in China and Romania). The

general trend from 1992 to the present is declining abortions globally, although abortion levels have been stable (after their peaks) for decades in a number of European countries.

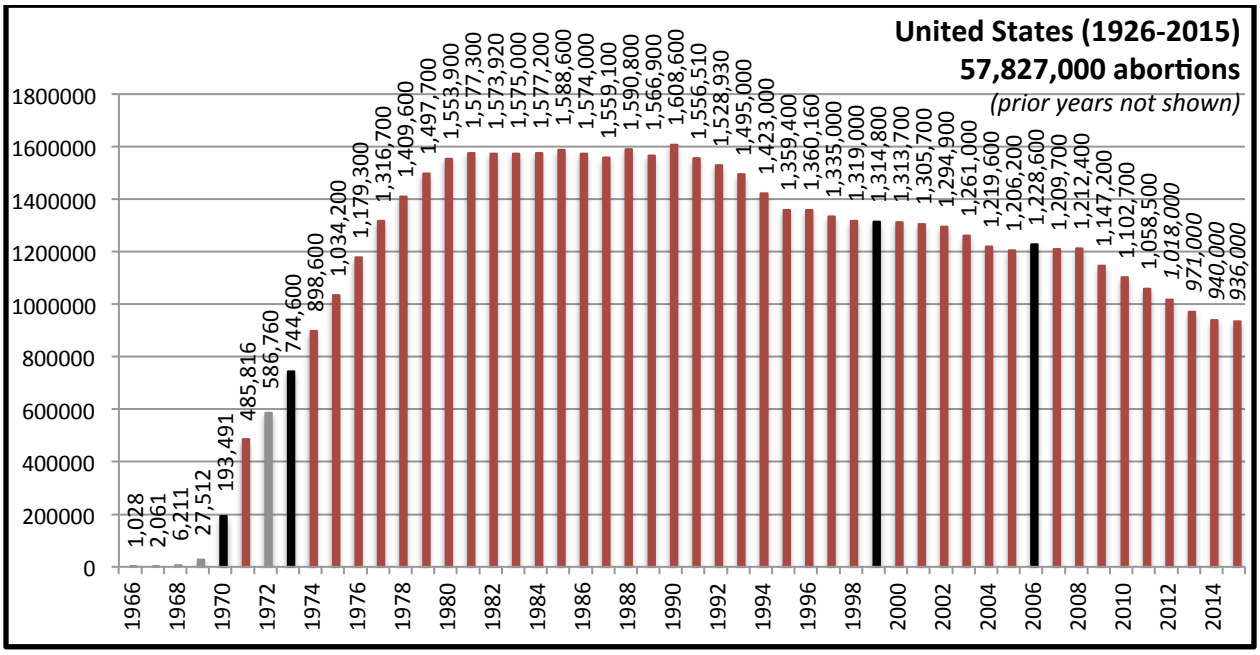

Fig. 1.4. United States abortions after state authorizations up to 1972, and all states by 1973.

2. Explanation of Trend Analysis Using Superposed Epoch Analysis

To analyze the general trends of national-level abortions over time, a superposed epoch was used to perform analysis of available time series sorted by categories of country in terms of abortion trends and socio-economic factors. A superposed epoch analysis takes the average of multiple time series all synchronized to the same reference time or epoch. Here, the time series were the individual national-level historical abortions, all rescaled to the same peak levels. Then, for each category of countries, a reference point in time was picked for comparing the series. Within each category, different types of trends were immediately evident, and used to sort the countries into subgroups. Finally, the average was taken of the rescaled series for countries within each subgroup to show general trends.

This process is illustrated in the next three figures. Figure 2.1 shows abortions per year reported for six Western European nations. Abortions are linearly interpolated across gaps of 5 years or less. The highest annual abortions vary from about 1,000 for Iceland up to 220,000 for the United Kingdom.

Figure 2.2 shows a rescale of each country's abortions relative to the average of their three highest years, setting this "peak" value equal to 1. (Bias from a single unusually high year is avoided by averaging the three highest years, as in the analyses to follow.) Now the relative behavior over time within each country is visible.

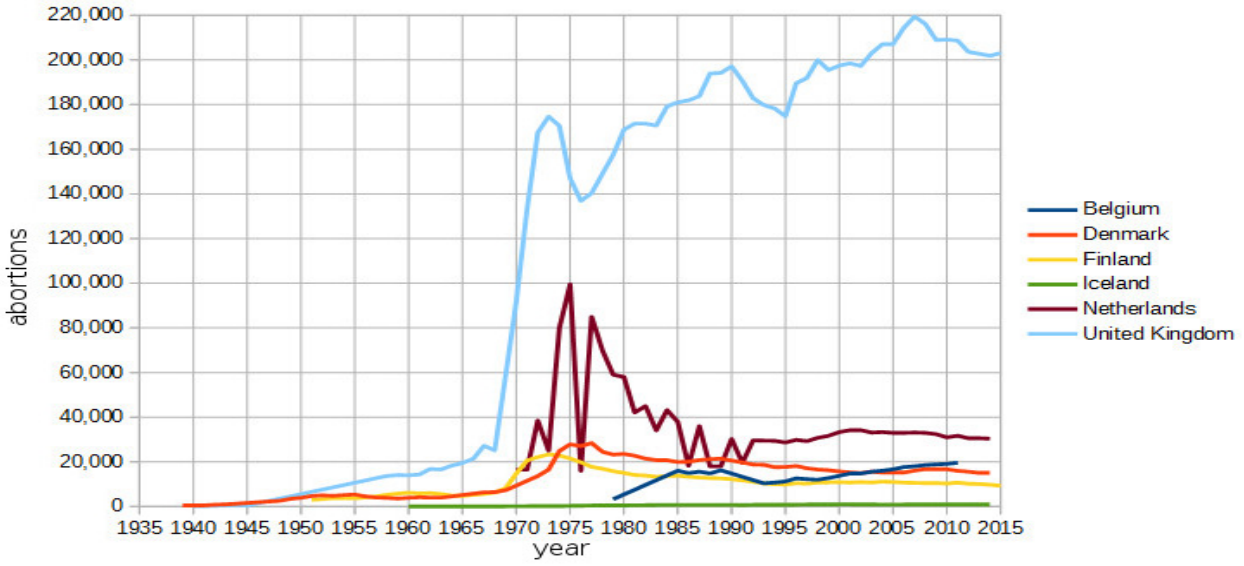

Fig. 2.1. Abortions per year for Belgium, Denmark, Finland, Iceland, the Netherlands, and the UK.

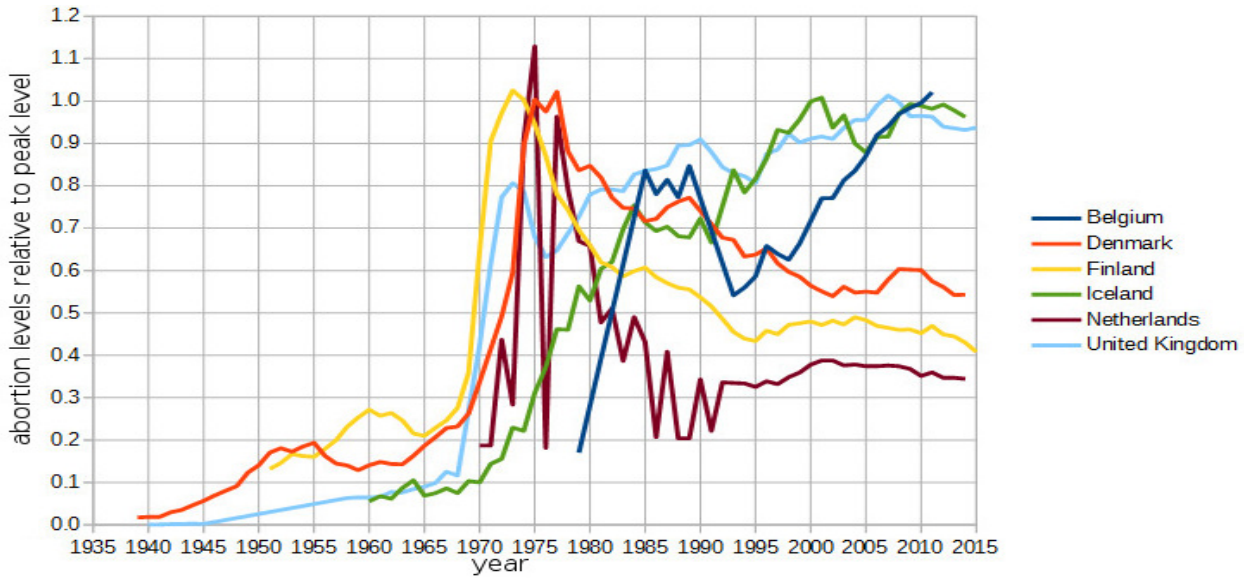

Fig. 2.2. Rescaled abortion time series for Belgium, Denmark, Finland, Iceland, Netherlands, and the U.K.

Figure 2.3 offsets each series in time (horizontally) so that the first year the rescaled values reach half the peak value, they all coincide at year 0. Now several general trends are obvious:

- The initial rise from low to high abortions is usually rapid (5-10 years);
- Three countries saw this rapid peak in abortion numbers followed by a significant drop in the next few decades (Denmark, Finland, the Netherlands); and
- Three countries saw abortion numbers remain high for decades (Belgium, Iceland, and the United Kingdom).

This example of superposed epoch analysis shows how it is conducted plus its usefulness in showing similar trends.

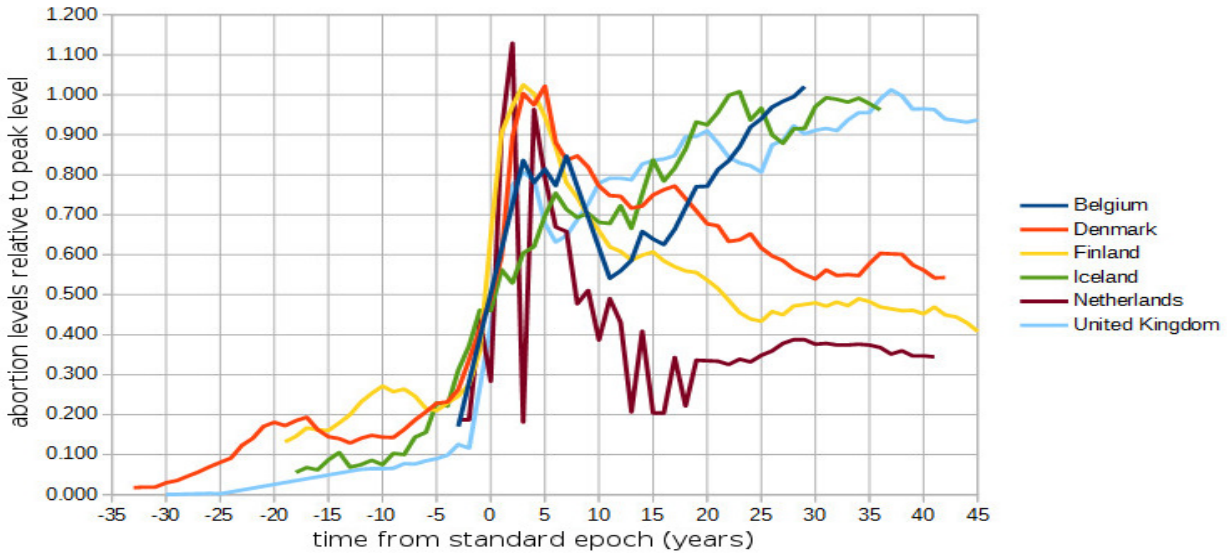

Fig. 2.3. Final superposed epoch abortion time series (adding time offset) for Belgium, Denmark, Finland, Iceland, the Netherlands, and the United Kingdom.

The superposed epoch analysis was then applied to the 78 countries and territories with relatively complete time series of annual abortions: those with at least 10 years' data, with a peak level of at least 150 abortions per year, and with some data prior to when abortions reached 70% of the respective peak level. Overseas departments of France are included separately, and the U.S.S.R., Czechoslovakia, and Yugoslavia are included in addition to their constituent republics/successor states separately. The 78 countries/territories were divided into five categories (with counts of countries/territories in parentheses):

- Western Europe (16),
- Eastern Europe (former communist states) (17),
- Former Soviet republics (17),
- Other developed nations in North America, Asia, and Australia/Oceania (11), and
- Developing nations (17).

The data used is tabulated in Part V, but limited to reported abortions and strictly constrained estimates only. Such estimates included published estimates for South Korea and estimates developed from special analysis of Australia, Austria, Canada, South Korea, and former Soviet and Yugoslav republics. In this analysis, linear interpolation was used for country data gaps of 5 years' or less missing data, but no estimates were included for gaps of more than 5 years. Also not included were extrapolated estimates for years before the first reported data or after the last reported data.

For each country, the time series were all rescaled as in the example above, i.e. rescaled to the "peak" level that is the average of the highest three years of reliable data. For former communist countries of Eastern Europe and the U.S.S.R., the standard epoch is 1991, the fall of the U.S.S.R. For all other countries, the standard epoch is when abortions first rise to half of the maximum value.

For each of the five country categories, the country-level time series was examined, and then the countries were separated into 2 groups based on visual inspection of trends. The analysis for each sub-group was completed separately, yielding the average series presented below and described by country group. The results show patterns in abortion trends over time that vary by socio-economic and policy factors.

Two graphs are shown in each section below. The first graph (e.g., Fig. 3.1) shows the individual trends for each country in the group. The second graph (e.g., Fig. 3.2) shows the composite trends for the two groups when the same countries are separated based on similar trends. The median trend for each group is depicted by a dark color, and the light color for each represents one standard deviation above and below the median. (A small spread in the standard deviation curves for a given group indicates very consistent country trends in that group; a large spread indicates a wider range of trends.) For each sub-group of each category, the countries are listed.

3. Western Europe Trends

Figure 3.1 shows trends for 16 countries and territories of Western Europe. Generally, the rise from low to high abortions is very rapid, rising from 20% to 80% of the peak in less than a decade. The early rise from near zero to 20% is slower. After the initial rise, two subgroups are evident: one where abortions remain high, and another where they drop 40-70%. The greatest drop is in the case of the Netherlands, where a large fraction of abortions in the years near the peak were obtained by non-residents.

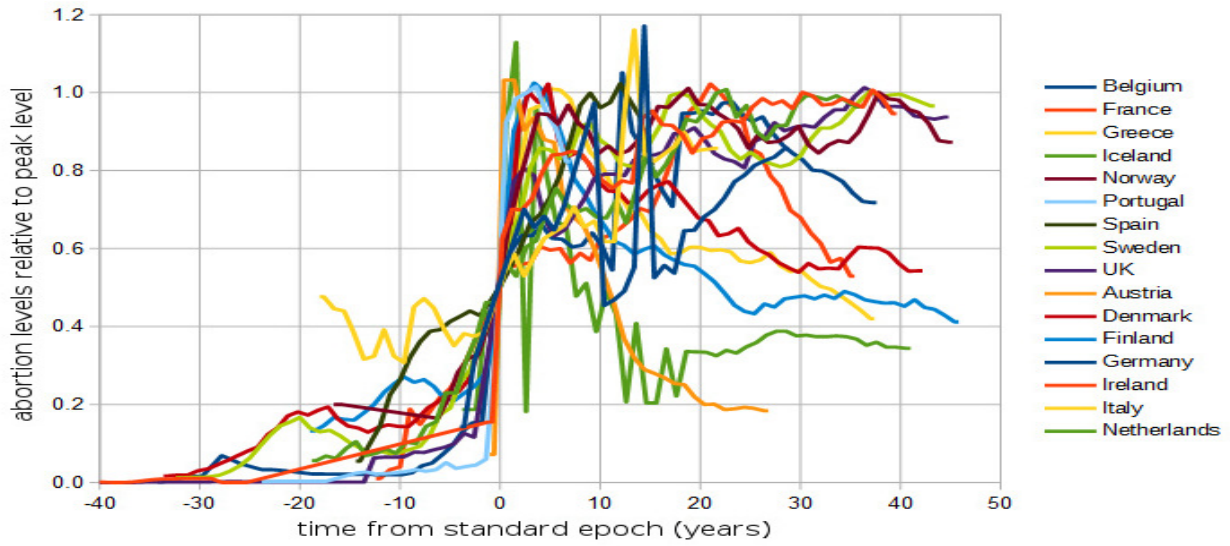

Fig. 3.1. Abortion time series for Western European countries.

These countries were divided into two groups based on whether abortions remained **high** after their initial rise, or reached an initial peak and then dropped relatively **low**:

- **Western Europe, high:** Belgium, France, Greece, Iceland, Norway, Portugal, Spain, Sweden, United Kingdom (N=9)
- **Western Europe, low:** Austria, Denmark, Finland, Germany, Ireland, Italy, Netherlands (N=7)

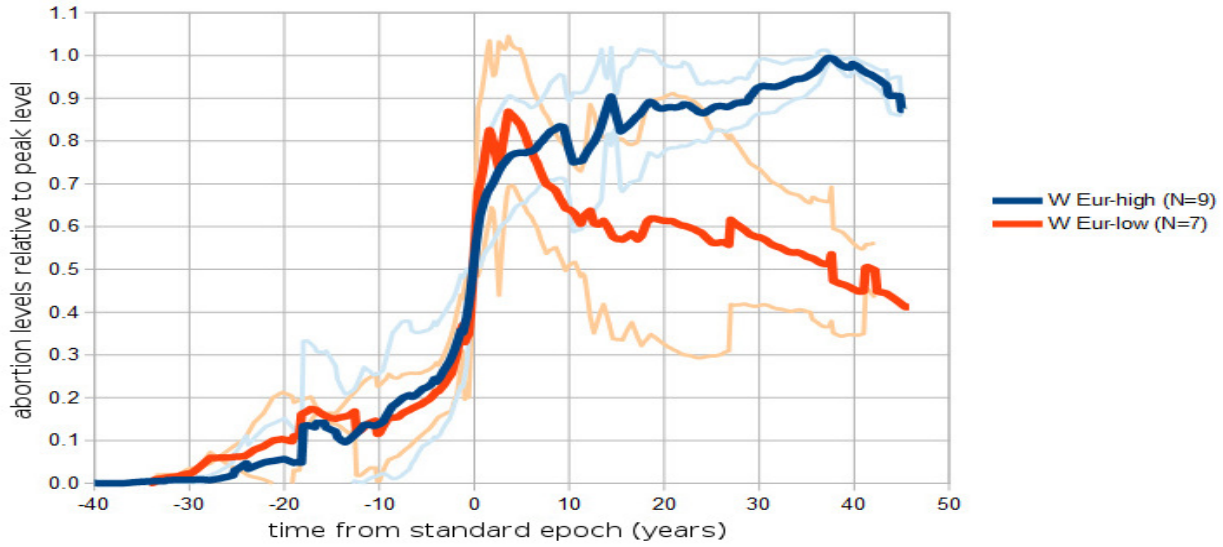

Figure 3.2. Superposed epoch analysis for Western European countries

The composite trends for each group are shown in Fig. 3-2. Generally, half of the numerical rise in abortions occurs in a very short time period—about 5 years. The rise from 10% of peak to 80% varies from about 8 years to 12-20 years, with longer times typical for those countries that authorized abortion prior to World War II. Although this variation in rise times is seen in both groups, the average rising trend is similar for both groups—in other words, on average the rise trends are similarly rapid regardless of what the post-peak trend is. The group with abortions remaining high actually tends to see continued slow rise for decades. The group where they drop tends to see a 50% drop over the next 40 years.

4. Eastern Europe Trends

Figure 4.1 shows trends for 17 formerly communist countries of Eastern Europe. All these countries show consistent and dramatic drops in abortion following the collapse of communism. During the period of communist rule, however, various trends are evident.

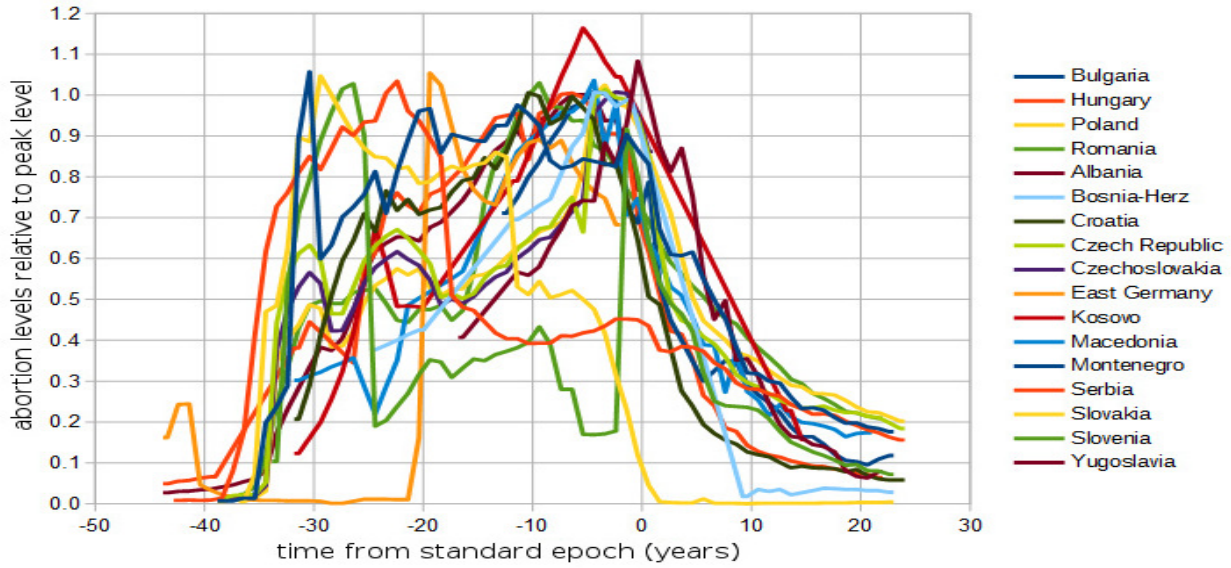

Fig. 4.1. Abortion time series for Eastern European countries.

These countries were divided into two groups based on whether the initial rise in abortions was **fast** (less than a decade), or **slow** (continuing for decades):

- **Eastern Europe, fast:** Bulgaria, Hungary, Poland, Romania (N=4)
- **Eastern Europe, slow:** Albania, Bosnia and Herzegovina, Croatia, Czech Republic, Czechoslovakia, East Germany, Kosovo, Macedonia, Montenegro, Serbia, Slovakia, Slovenia, Yugoslavia (N=13)

Fig. 4-2 below shows the composite trends for each group. For the fast rise group, on average abortions rose from very low numbers to peak within the decade of the 1950s, after which they tended to decline through subsequent decades of communist rule. For the slow rise group, peak levels of abortion were not attained on average until the 1980s. There is considerable diversity in the country trends from the 1950s to the 1980s; however, there is some overlap in country trends between the two groups. All of these countries, though, uniformly rejected abortion after liberation from communism, and abortion rates dropped on average 90% relative to their peaks by the 2010s.

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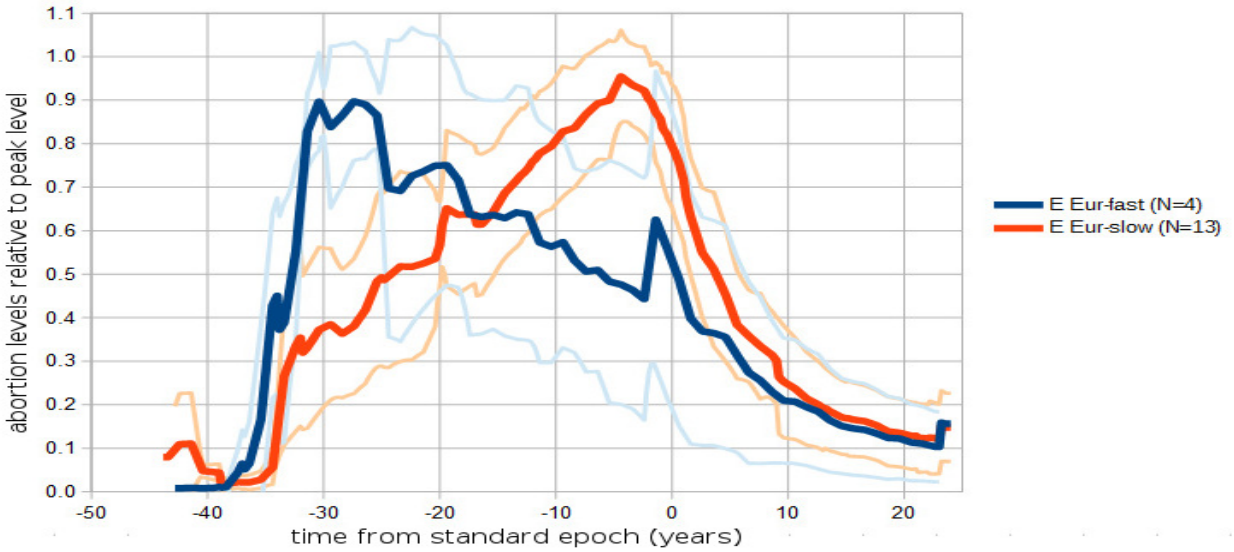

Figure 4.2. Superposed epoch analysis for Eastern European countries

5. Former Soviet Republic Trends

Figure 5.1 shows trends for 17 former Soviet countries and other regions. The limited data prior to the 1950s shows different republic-level behavior, but from the mid-1950s to the 1980s there was consistency in sustained high levels of abortion. All countries showed dramatic drops in abortion after the fall of communism, like the countries of Eastern Europe, although some did not see this trend continue after 2000.

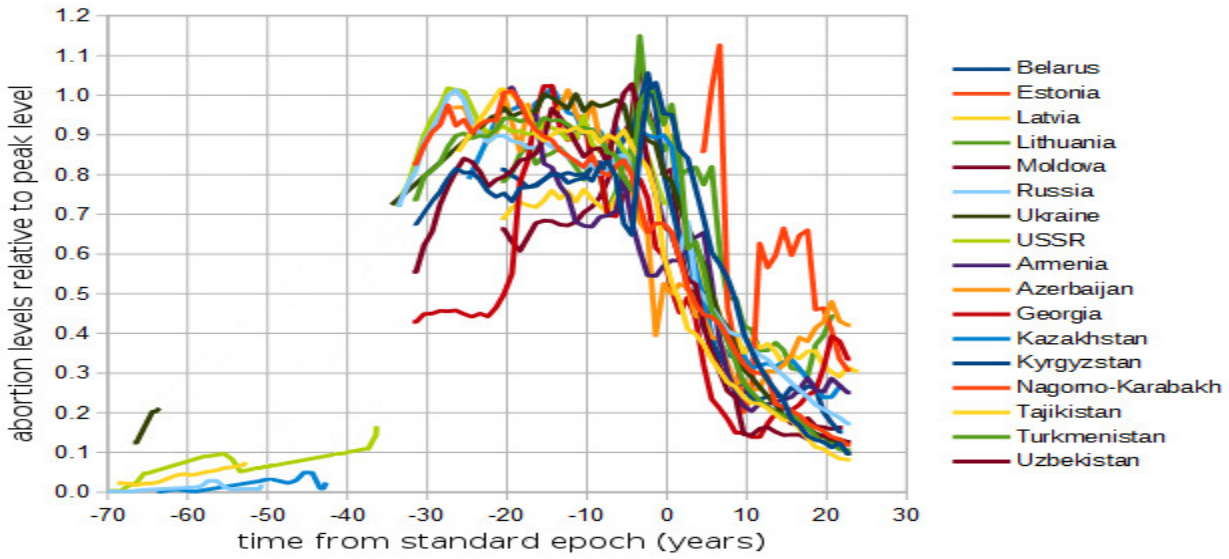

Fig. 5.1. Abortion time series for former Soviet countries.

These countries were divided into two groups based on whether abortions declined steadily after the collapse of the U.S.S.R. through 2015, or declined but eventually leveled out or began

rising again. This matched the division of these countries into **European** (sustained decline) or **Asian** (decline stops) countries:

- **Former Soviet, European:** Belarus, Estonia, Latvia, Lithuania, Moldova, Russia, Ukraine, U.S.S.R. (N=8)
- **Former Soviet, Asian:** Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Nagorno-Karabakh, Tajikistan, Turkmenistan, Uzbekistan (N=9)

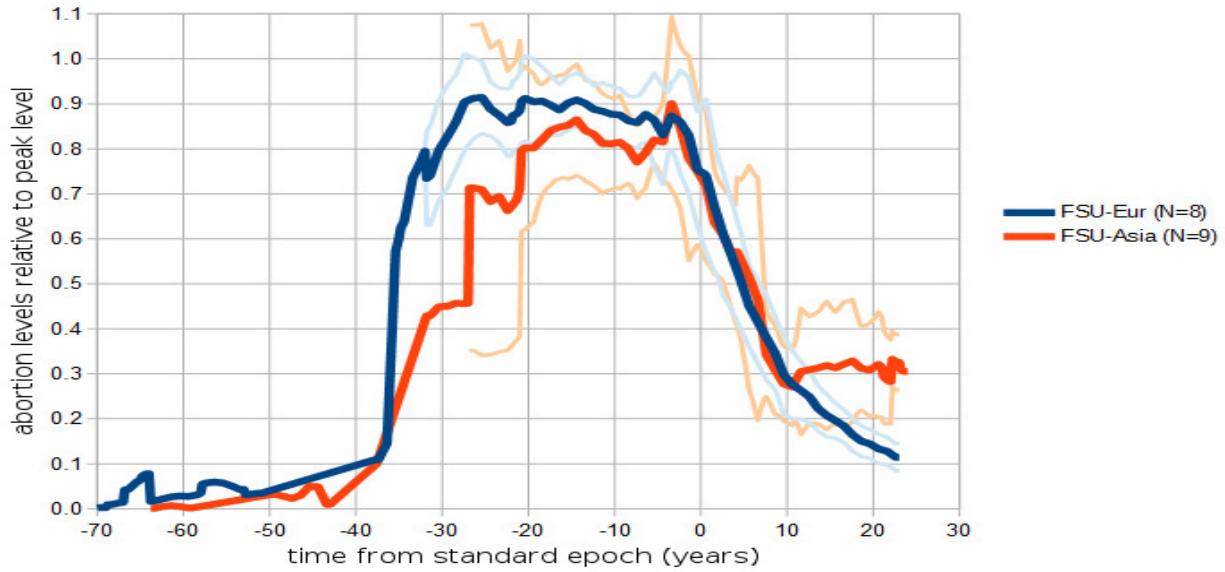

Figure 5.2. Superposed epoch analysis for former Soviet countries

Fig. 5-2 shows the composite trends for each group. The European republics tended to see near-peak abortion levels already in the 1960s, whereas most of the Asian republics took longer to reach these levels. (Note that the trend results for the 1950s and earlier, which is year -30 and earlier in the graph, are based on the estimate methodology explained in Part IV). However, there was a uniform trend for a drop in abortions in the first decade after communism, averaging 70%. This trend was sustained for European countries, attaining a 90% drop (on average) in 2015 relative to peak levels—similar to Eastern European countries. However, for Asian countries the levels tended to remain roughly stable at 30% of peak (on average) since 2000.

6. Other Developed Country Trends

Figure 6.1 shows trends for 11 developed countries in the Americas, Asia, and Australia/ Oceania. These countries varied in how rapid the initial rise in abortion was, taking from about 5 years to about 20 years to go from 10% of peak to 90% of peak. Post-peak trends show two groups, one with dramatic decline and one with modest decline.

These countries were divided into two groups based on whether abortions remained **high** after their initial rise, or reached an initial peak and then dropped relatively **low**:

- **Other developed, high:** Australia, Bermuda, Canada, Greenland, Guam, New Zealand, United States (N=7)
- **Other developed, low:** Hong Kong, Japan, Republic of Korea, Singapore (N=4)

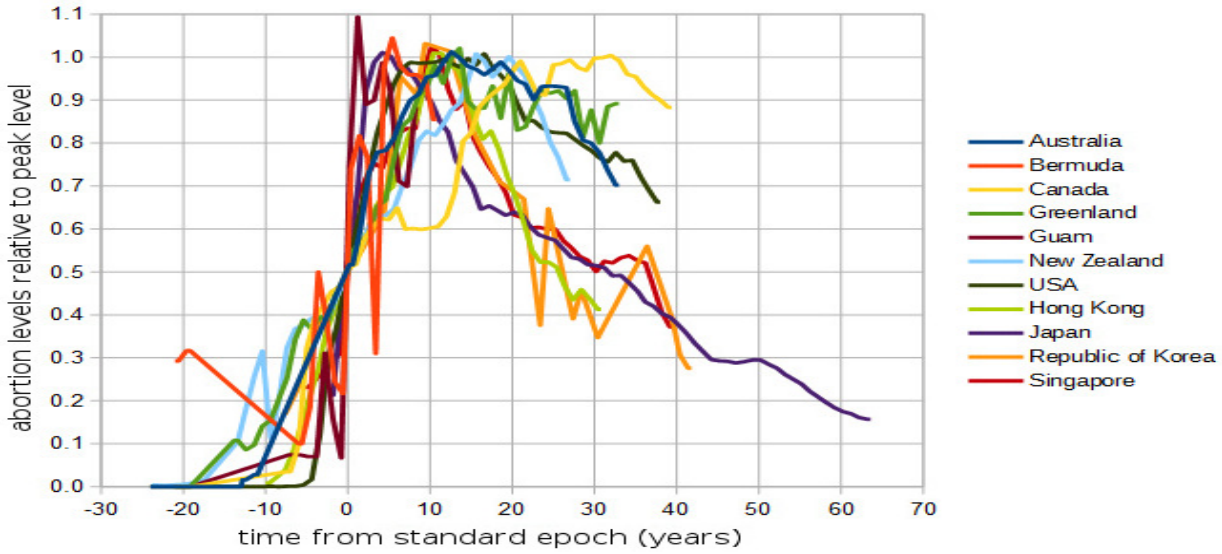

Fig. 6.1. Abortion time series for 11 developed countries.

The high/low trend separation matches the separation of these developed countries geographically, with the post-peak low group including countries of East Asia, and the post-peak high group including countries of North America, Australia, and Oceania.

Fig. 6.2 shows the composite trends for each group. Both groups on average take 15 years for abortions to rise from 10% to 80% of peak levels. The post-peak high group tends to take longer to reach peak abortions levels and then to show a slight decline (around 20%) over the 2 decades after the peak. The post-peak low group shows a 70% decline from peak after 40 years. (Note that the low group average for years after +40 is represented only by Japan.)

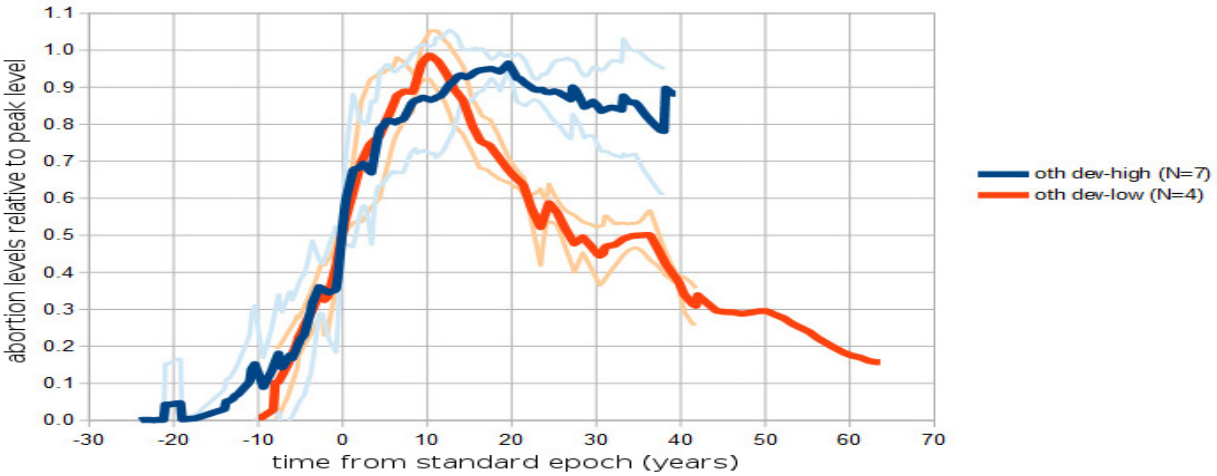

Figure 6.2. Superposed epoch analysis for other developed countries

7. Developing Country Trends

Figure 7.1 shows trends for 17 developing countries and territories. These show various trends both in rise time and in whether peak levels are sustained or not.

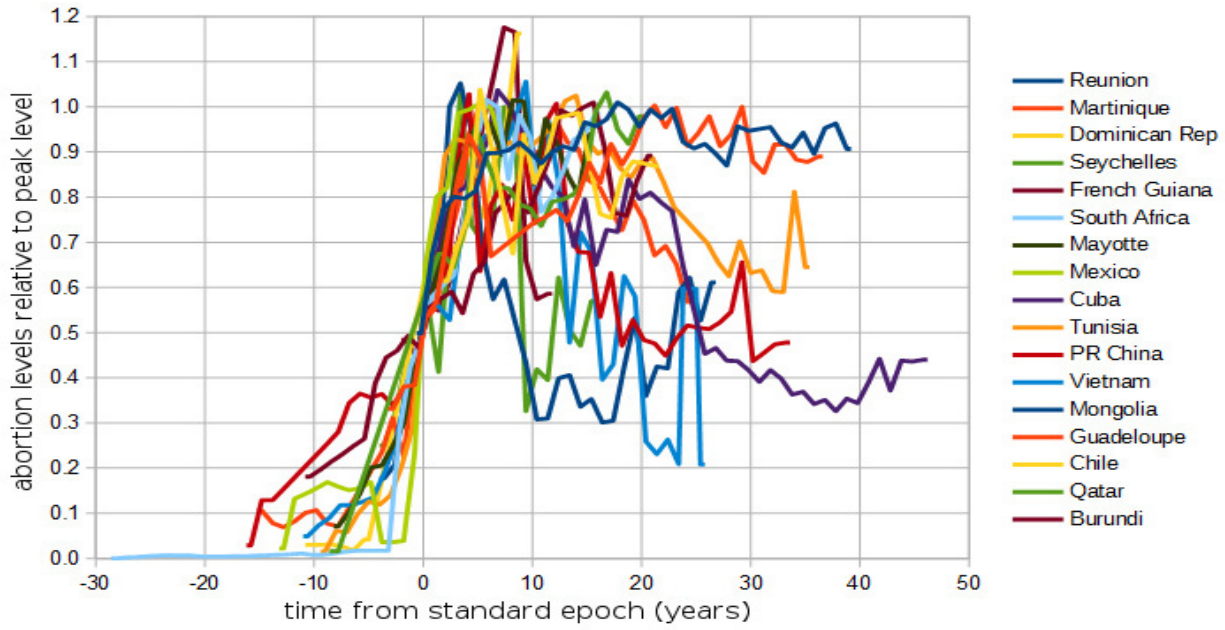

Fig. 7.1. Abortion time series for developing countries and territories.

These countries were divided into two groups based on whether abortions remained **high** after their initial rise, or reached an initial peak and then dropped relatively **low**:

- **Developing, high:** Dominican Republic, French Guiana, Martinique, Mayotte, Mexico, Reunion, Seychelles, South Africa (N=8)
- **Developing, low:** Burundi, Chile, PR China, Cuba, Guadeloupe, Mongolia, Qatar, Tunisia, Vietnam (N=9)

Fig. 7-2 shows the composite trends for each group. Both groups show the same average rise times, taking 15 years for abortion levels to rise from 10% to 90% of peak levels. For the post-peak low group, abortions dropped about 50% over the next 40 years, similar to the low group for Western Europe. The post-peak high group, however, maintained peak abortion levels for those 40 years. There are not obvious general differences between the countries in the two groups—both groups include countries of the Americas and Africa; both include countries that are predominantly Christian and predominantly Islamic; and both include French overseas departments. However, only the low group includes communist countries or countries in Asia.

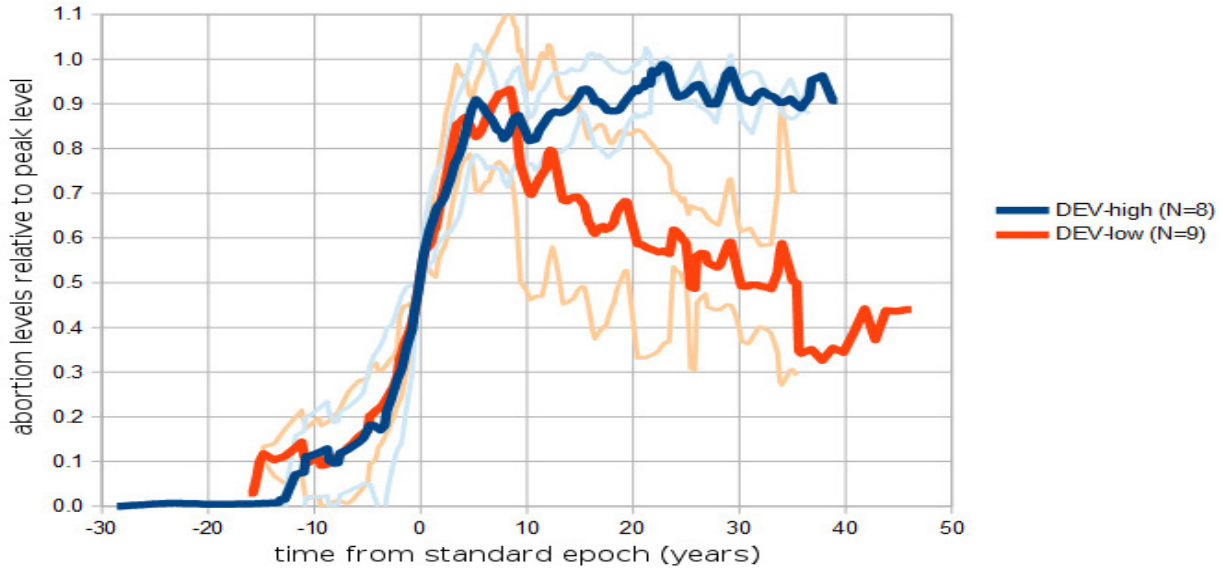

Figure 7.2. Superposed epoch analysis for developing countries

8. Timescales of Abortion Increases

To look for trends in the initial rise of abortion numbers, the rescaled national trends from the preceding sections were analyzed. As discussed above, the rise time-periods vary significantly (5 to 20 years), but this generally does not show in the superposed epoch analysis averages—in particular, the two sub-groups usually have similar trends for the rising part of the trend. This illustrates that whether the initial rise is slow or rapid does not predict whether abortions will remain high or drop after the peak.

To examine the behavior during the initial rise for all countries, calculations were made of timescales relative to the peak number of abortions for the following: from 10% to 50% of peak, from 20% to 50% of peak, from 50% to 80% of peak, and from 50% to 90% of peak. This analysis used the same data subset that was described in section 2 above. Little correlation was found for these timescales with each other, again indicating that part of the trend does not help predict the rest of the trend. Figure 8.1 shows the timescales from 10% to 90% of peak on the vertical axis, plotted against the year that 50% of the peak was reached on the horizontal axis. One trend (shown by the moving average line) is the tendency for growth to maximum abortion levels to be faster in the 1990s and 2000s—even for developing countries. Thus, the lower the position on this graph, the faster the countries reached peak levels.

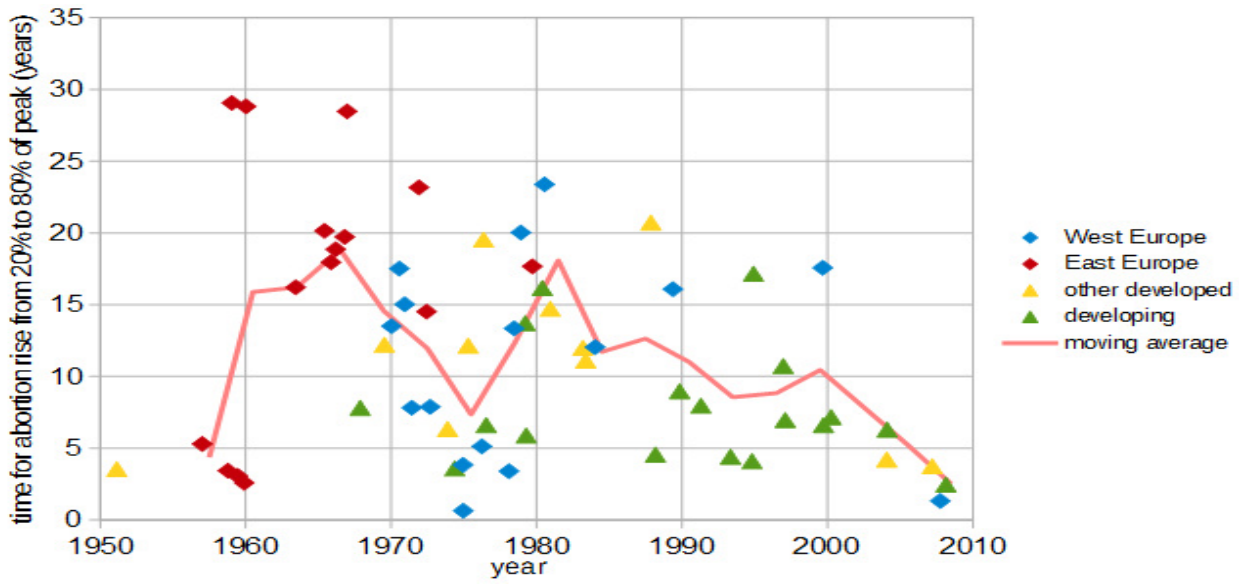

Fig. 8.1. Calculated rise times (10% to 90% of peak) vs. year that 50% peak abortions is attained.

Table 1 shows the calculations for these timescales for all countries. These timescales are based on when the various levels (percentage of peak) were attained for abortion levels interpolated between the annual abortions in the Part V data tables. Therefore, the fractional year values have little meaning for individual countries, but collectively for all countries they illustrate trends.

Table 1. Trend Results by Country: Year Abortions Reached 50% of Peak Level; Times to Rise from 10% to 20%, 20% to 50%, 50% to 80%, and 80% to 90% of Peak Level

Country	Year of 50% of peak level	Rise time (yr) 10% to 20%	Rise time (yr) 20% to 50%	Rise time (yr) 50% to 80%	Rise time (yr) 80% to 90%	Country Category
Burundi	2004.1			3.3	1.1	dev
Chile	1997.0	1.2	3.5	7.2	0.8	dev
China	1979.2	4.3	10.7	3.0	0.5	dev
Cuba	1967.9			3.8	1.9	dev
Dominican	1993.3			4.4	0.4	dev
French Guiana	1994.9		9.1	8.0	3.7	dev
Guadeloupe	1991.3	10.4	4.6	3.4	0.6	dev
India	1980.4	0.9	5.4	10.7	7.7	dev
Martinique	1979.3			2.9	0.9	dev
Mayotte	2000.3	2.4	4.4	2.8	1.2	dev
Mexico	2008.1	11.1	0.8	1.7	1.2	dev
Mongolia	1988.2		2.7	1.9	0.3	dev
Qatar	1997.1		4.2	2.7	0.3	dev

Reunion	1976.5			4.6	3.6	dev
Seychelles	1994.8			4.1	0.5	dev
South Africa	1999.7	0.4	2.5	4.1	0.7	dev
Tunisia	1974.4	3.9	1.8	1.7	1.2	dev
Vietnam	1989.8	4.7	5.6	3.4		dev
Albania	1979.7			8.7	2.4	E Eur
Bulgaria	1959.9	0.8	2.1	0.5	0.4	E Eur
Croatia	1963.4		3.0	13.2	3.5	E Eur
Czech Republic	1959.1	0.3	1.2	27.9	0.3	E Eur
Czechoslovakia	1960.0	0.3	2.1	26.8	0.5	E Eur
East Germany	1971.9	1.3	22.8	0.4	0.1	E Eur
Hungary	1957.0	0.9	1.4	3.9	5.5	W Eur
Kosovo	1966.8	2.8	3.7	16.0	1.8	E Eur
Macedonia	1972.4			7.5	3.5	E Eur
Poland	1958.8	0.3	1.9	1.5	1.6	E Eur
Romania	1959.5	0.2	0.7	2.3	1.2	E Eur
Serbia	1966.2	2.6	10.2	8.6	2.7	E Eur
Slovakia	1967.0	0.3	8.9	19.5	0.6	E Eur
Slovenia	1965.4	0.9	7.2	12.9	1.9	E Eur
Yugoslavia	1965.9	1.3	6.9	11.0	3.1	E Eur
Georgia	1971.8			2.4	1.0	FSU
U.S.S.R.	1956.4			3.8	1.8	FSU
Australia	1983.4			5.1	2.9	other
Bermuda	2004.1			4.2	0.2	other
Canada	1976.4	0.4	5.4	14.1	3.0	other
Greenland	1980.9	5.3	8.4	6.3	2.7	other
Guam	2007.2	0.5	3.1	0.7	0.3	other
Hong Kong	1983.2	1.6	4.9	7.1	1.8	other
Japan	1951.1		1.7	1.9	0.4	other
New Zealand	1987.9	1.5	12.1	8.6	5.3	other
Republic of Korea	1969.5		7.1	5.1	0.6	other
Singapore	1975.3		6.1	6.1	2.8	other
United States of	1973.9	0.6	2.9	3.4	1.7	other
Austria	1975.0	0.1	0.3	0.3	0.1	W Eur
Belgium	1984.0	0.7	4.0	8.1	5.2	W Eur
Denmark	1972.7	17.5	6.3	1.6	0.5	W Eur
Finland	1970.0	8.4	12.4	1.1	0.6	W Eur

France	1976.2	0.2	0.6	4.5	9.6	W Eur
Germany	1978.5	2.9	1.7	11.6	0.2	W Eur
Greece	1989.4			11.1	0.5	W Eur
Iceland	1978.9	8.8	5.8	14.2	4.0	W Eur
Ireland	1980.5	3.2	6.4	17.0	1.3	W Eur
Italy	1978.1			1.4	0.7	W Eur
Netherlands	1975.0	1.7	3.3	0.5	0.5	W Eur
Norway	1970.6		15.1	2.5	1.1	W Eur
Portugal	2007.8	0.3	0.8	0.5	0.2	W Eur
Spain	1999.7	1.7	11.4	6.1	1.2	W Eur
Sweden	1971.4	18.9	4.8	3.0	0.8	W Eur
United Kingdom	1970.9	2.5	1.9	13.2	14.1	W Eur

9. Conclusions on Trends

The conclusions of these trends are summarized as follows:

- Worldwide abortions were low during the 1920s to 1940s (except for 4 countries), increased rapidly from the 1950s to the 1980s, and then declined dramatically after the fall of communism in the early 1990s.
- Abortion trends vary significantly among countries, but there are common aspects among nations within specific groups and regions.
- In Western Europe, the rise from low to high abortions is very rapid, but after the first peak, two patterns are evident: some countries continue to rise slowly, while others saw a 50% drop over the next 40 years.
- In Eastern Europe, countries show consistent and dramatic drops in abortion following the collapse of communism, ranging from 70 to 90 percent. However, during the period of communist rule, various trends are evident.
- In formerly communist countries in Europe and Asia, abortions prior to the fall of communism were high, though trends over time varied; but when communist rule ended, abortions dropped dramatically by 70-90 percent over the following two decades.
- In the 17 former Soviet republics and other regions, republic-level behavior varied significantly until the mid-1950s. From then to the 1980s there was consistency in sustained high levels of abortion. All republics showed dramatic drops in abortion of 70-90% after the fall of communism, but then some ceased to decline.
- Other developed countries varied in how rapid they experienced the initial rise in abortion, but after the peak, they either experienced dramatic or modest declines.
- Developing countries and territories show various trends both in rise time and in whether peak levels are sustained or not; however, for 40 years after the peak, they either dropped by 50%, or maintained peak abortion levels.
- Whether the initial rise is slow or rapid does not predict whether abortions will remain high or drop after the peak.