

Chapter One

1. The Unexpected Stall and Reversal of the Fertility Decline and the Oil Induced Economic Shocks in Venezuela during the 1970s and 1980s

Introduction

This chapter examines the most important aspects of the Venezuelan demographic transition. These are the stalls and reversals of the fertility¹ decline that seem to be associated with extraordinary rises in the price of oil. Since these deviations from the traditional demographic transition suggest changes in the timing of births, it is hypothesized that these changes result from alterations in the economic conditions brought about by positive exogenous macroeconomic shocks that affect individuals' decisions about when to have children.

These shocks are generated by changes in oil revenues, which today account for about 33% of Venezuela's gross domestic product (GDP), 80% of its export income, and more than 50% of its government operating revenue. Using statistics from the United Nations Demographic Yearbook, this chapter notes stalls and reversals in the period fertility rates that occurred between 1973 and 1978 and again between 1987 and 1991, the years coinciding with positive economic shocks fueled by abnormally high oil prices.

In general, during the last 50 years, fertility rates in Venezuela have declined because of a demographic transition, a phenomenon that takes place when mortality rates² and, in particular, infant mortality rates³, drop sharply. These decreases eventually cause the birth rate⁴ to fall, because with an increasing awareness that their children are more likely to survive to adulthood, families tend to have fewer children (Inter-American Development Bank 2000, 45). However, since this realization is not instantaneous, it takes some time for families to start adapting to the new conditions. Consequently, the

¹ The term fertility does not refer to the ability of males or females to have children, since it is a given that most men are fertile for the duration of their lives and most women are fertile between the ages of 11 and 50 years. Instead, fertility refers to the number of children a woman bears while she can.

² Mortality rate refers to crude death rates defined as deaths per 1,000 mid-year population.

³ Infant mortality rate is defined as deaths of infants less than a year old per 1,000 live births in the same year.

⁴ Birth rate refers to the crude birth rate defined as the annual number of births per 1,000 mid-year population.

lag between declining mortality rates and total birth rates usually creates a rapid increase in population growth.

As this demographic transition matures, the fertility decline is expected to be consistent or monotonic. However, an analysis of the demographic transition in Venezuela reveals that the decline of fertility deviates from the norm, because it stalls and reverses twice. When fertility is measured in terms of live births per 1,000 population, these stalls and reversals occurred between 1973 and 1978 and again between 1987 and 1991. When measured in terms of the total fertility rate (TFR)⁵, these stalls and reversals took place from 1973 to 1975 and again from 1988 to 1992. Interestingly, these disruptions lasted only a few years, and when the trend resumed its expected course, it did so at a faster pace.

As demographers have known since the 1940s, changes in the timing of childbearing distort standard measures of period fertility, such as the crude birth rate and the widely used TFR. Period fertility rates are depressed in years when women delay childbearing and inflated in years when childbearing is accelerated (Bongaarts 1999, 273). In Venezuela, as in other countries, changes in the period fertility rate can result from changes in the timing of childbearing, and it is tempting to use this theory to explain the unexpected increase in the period fertility rates in the mid 1970s and late 1980s. It is possible that these deviations are just distortions in such standard measures of period fertility that changes in the timing of childbearing have caused.

In Venezuela, however, there seems to be a connection between these halts in the fertility decline during the demographic transition and the positive macroeconomic shocks experienced during the same periods. By temporarily changing the economic conditions for Venezuelan households, it is possible that these shocks, precipitated by a surge in oil prices, caused many couples to speed up having children and then compensate by stopping sooner than they might otherwise have. The positive economic conditions in the mid 1970s and late 1980s may have produced the changes to the period fertility rates by generating changes in the timing of births rather than changes in lifetime fertility.

⁵ The total fertility rate is interpreted as the “average number of children a woman would bear if she survived to the end of the reproductive age span and experienced at each age a particular set of age-specific fertility rates” (Preston, 2001, p. 95).

This chapter hypothesizes that sharp and short changes in economic conditions faced by a Venezuelan household alters the timing of births inducing changes in period fertility, thereby creating unexpected moves in the period fertility rates. It is organized into two sections. Section 1.1 looks at the demographic transition and the associated decline of fertility in Venezuela from 1948 to 1996 to assess the expected downward trend of fertility. It highlights the unexpected evidence of a reversal of the fertility decline during two short periods that raise the questions of interest to this study. Section 1.2 presents an overview of the general macroeconomic conditions of Venezuela during the 1970s through the early 1990s. It emphasizes the macroeconomic shocks experienced over this period and suggests that they may have significantly changed the economic conditions faced by individuals, who might have responded by having children sooner. It then attempts to establish a connection between the positive macroeconomic shocks and the sudden reversal of the fertility decline. Finally, Section 1.3 presents some conclusions that Chapters two and three of this study later discuss.

1.1. The Venezuelan Demographic Transition: The Unexpected Stall and Reversal of the Fertility Decline

Economists and demographers call the phenomenon that takes place when

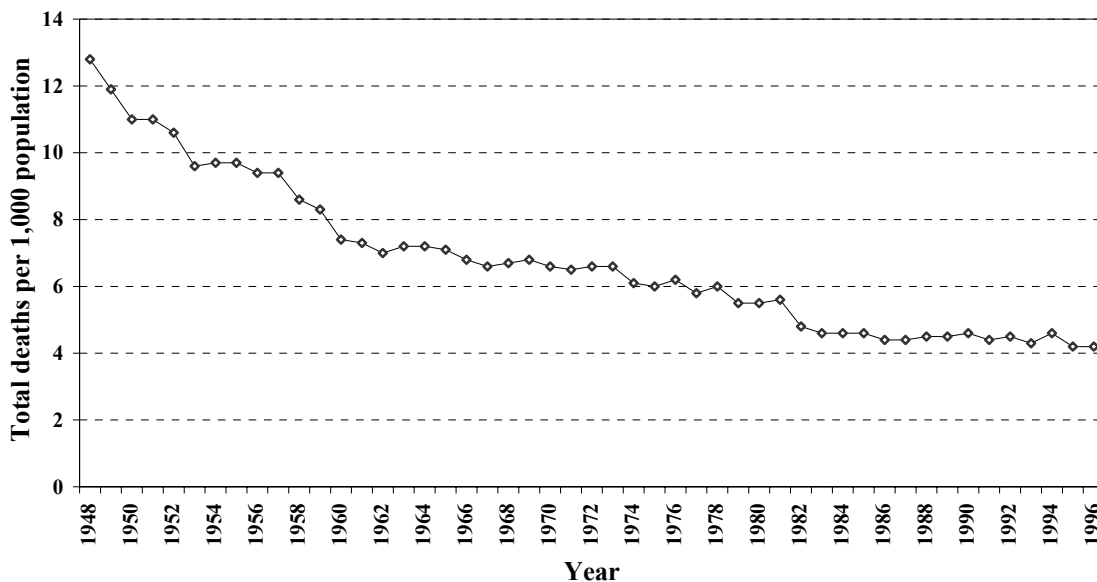


Figure 1.1 Venezuela’s Total Mortality Rates from 1948 to 1996
Source: UN Demographic Yearbook

mortality rates, and, in particular, infant mortality rates, start decreasing sharply the demographic transition. This sharp decrease creates a rapid increase in population growth due to the lag between falling mortality rates and total birth rates. Another change will occur still later, when the reduced incidence of infant deaths translates into lower birth rates as families realize that their children are more likely to survive to adulthood. However, the lag scenario sets in motion the wheels of a demographic transition, as the population boom creates a very large generation of children that changes the age composition of the country.

In Venezuela, the demographic transition began in the second half of the 1940s with sustained declines in mortality rates, particularly of infants. The expected fertility decline followed in the first half of the 1960s. Figure 1.1, which depicts the total mortality rate (deaths per 1,000 population) in Venezuela from 1948 to 1996, clearly shows a huge decline in the total mortality rate from 12.8 deaths per 1,000 population in 1948 to 4.2 deaths per 1,000 population in 1996, a decrease of 67.19% in 48 years. This decrease is particularly sharp during the late 1940s and throughout the 1950s, the years marking the start of the demographic transition. Figure 1.2, which depicts the infant mortality rates (infant deaths per 1,000 live births) in Venezuela from 1948 to 1996, shows the decline in the infant mortality rate from 97.8 infant deaths per 1,000 live births

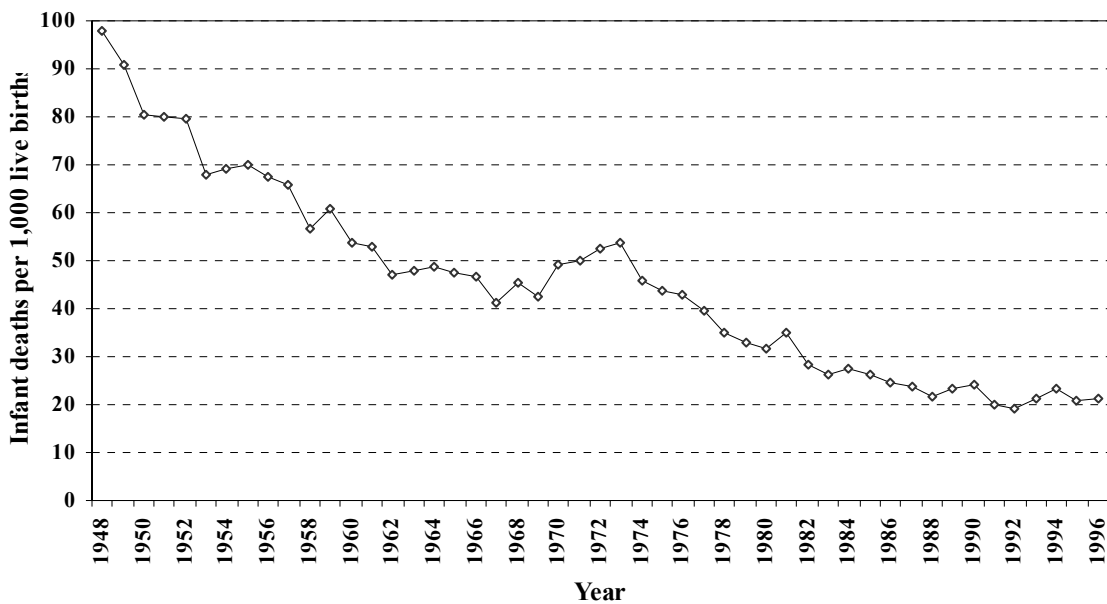


Figure 1.2 Venezuela's Infant Mortality Rates from 1948 to 1996

Source: UN Demographic Yearbook

in 1948 to 21.4 infant deaths per 1,000 live births in 1996, a decrease of 78.12% over the same 48 years that the total mortality rate declined 67.19%. According to Figures 1.1 and 1.2, the demographic transition in Venezuela started no later than 1948, and the decline in infant deaths surpasses the general decline.

It is important to note that even though both the total mortality rate and the infant mortality rate decreased sharply from 1948 to 1996, Figure 1.2 does not show the same clear and almost consistent downward trend as Figure 1.1 does. Instead it shows a noticeable reversal of the downward trend occurring between 1969 and 1973. During this four-year period, the infant mortality rate in Venezuela grows from 42.7 infant deaths per 1,000 live births in 1969 to 53.8 infant deaths per 1,000 live births in 1973, an overall increase of about 26.00%. This brief upward trend is important because of when it ended, in 1973, just as abnormally high oil prices triggered an economic boom that was in full swing by 1974. As the principal export of Venezuela, oil accounts for a large proportion of the government's total income, and the unexpected increase in oil revenues could have allowed the government to curb this upward trend in infant mortality, because it had more money to spend on health programs. At this point, the impact of this noticeable four-year reversal on fertility behavior is unclear. However, it is clear that any impact was temporary, because the downward trend in infant mortality quickly resumes

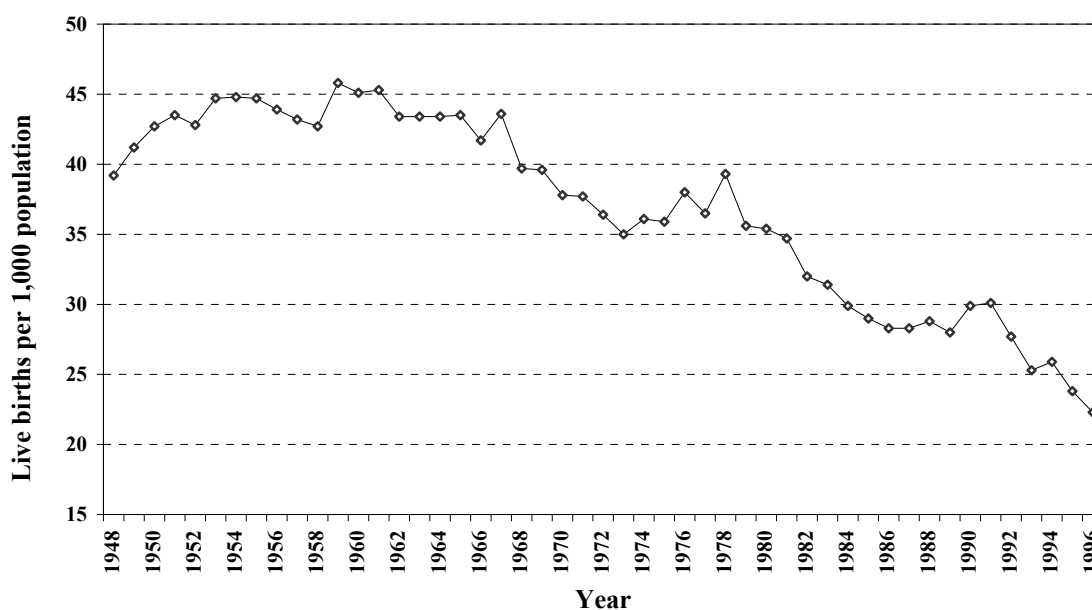


Figure. 1.3 Venezuela's Live Birth Rates from 1948 to 1996

Source: UN Demographic Yearbook

in 1974 and starts to stabilize at about 20 infant deaths per 1,000 live births in the mid 1990s.

A crucial element of this and any demographic transition is the effect that such sharp changes to mortality expectations have on reproductive behavior. As early as the middle of the 20th century, Notestein (1945, 37-57; 1953, 13-31) recognized and began to emphasize the effect of a mortality decline on the motivation for high fertility. As parents become aware that their children are more likely to survive to adulthood, they tend to have fewer children, thereby causing birth rates to fall. However, since this awareness is not instantaneous, it takes some time for families to start responding to the decline in infant mortality. Figure 1.3, which depicts the live birth rate (live births per 1,000 population) in Venezuela from 1948 to 1996, clearly shows that the live birth rate increases from 39.2 live births per 1,000 population in 1948 to 45.1 live births per 1,000 population in 1960 and that the decrease of birth rates does not begin until the mid 1960s, well over 15 years after the mortality rates begin to decrease. Figure 1.3 also shows that eventually the decrease in mortality rates brought about an almost consistent decrease in the birth rate, as families began to realize that since fewer infants were dying, they did not need to have as many children.

The timing of the fertility decline in Venezuela is very similar to the one

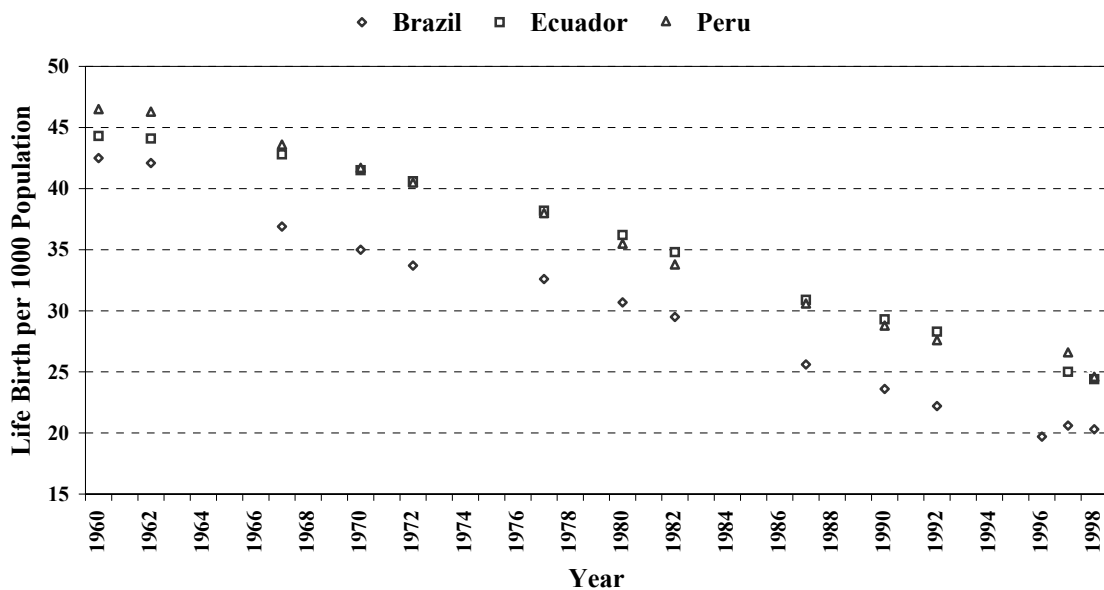


Figure 1.4 Live Birth Rates in Selected Countries of Latin America
Source: World Bank

documented for the rest of Latin American. According to Guzmán (1996, xxiii), fertility declines, following declines in mortality rates, appear to have started in most of the countries in Latin America during the first half of the 1960s. Similarly in Venezuela, the fertility decline also started in the first half of the 1960s, as Figure 1.3 clearly indicates.

After 1967, the live birth rate declines consistently to 35.0 live births per 1,000 population in 1973, as the lag between birth and mortality rates decreases. This represents a decrease of 17.43%. However, this trend unexpectedly reverses from 1973 to 1978, when it reaches 39.3 live births per 1,000 population, an increase of 12.29%, reversing about 71% of the earlier decrease from 1967 to 1973. After 1978, the live birth rates again decline, but a second, more limited, reversal occurs from 1987 to 1991. Then they continue their decline, reaching 22.3 live births per 1,000 population by 1996. These reversals of the downward trend are of particular interest, because they seem to defy the natural decline in fertility expected of a typical demographic transition. Furthermore, such a reversal in the fertility decline does not seem to be present in other Latin American countries. Figure 1.4, which depicts live birth rates from 1960 to 1998 in Brazil, Ecuador, and Peru, shows the absence of such reversals. In fact, even though countries in Latin America have very different demographic experiences, the reversal of the fertility does not seem to be a regional trend. This suggests the existence of

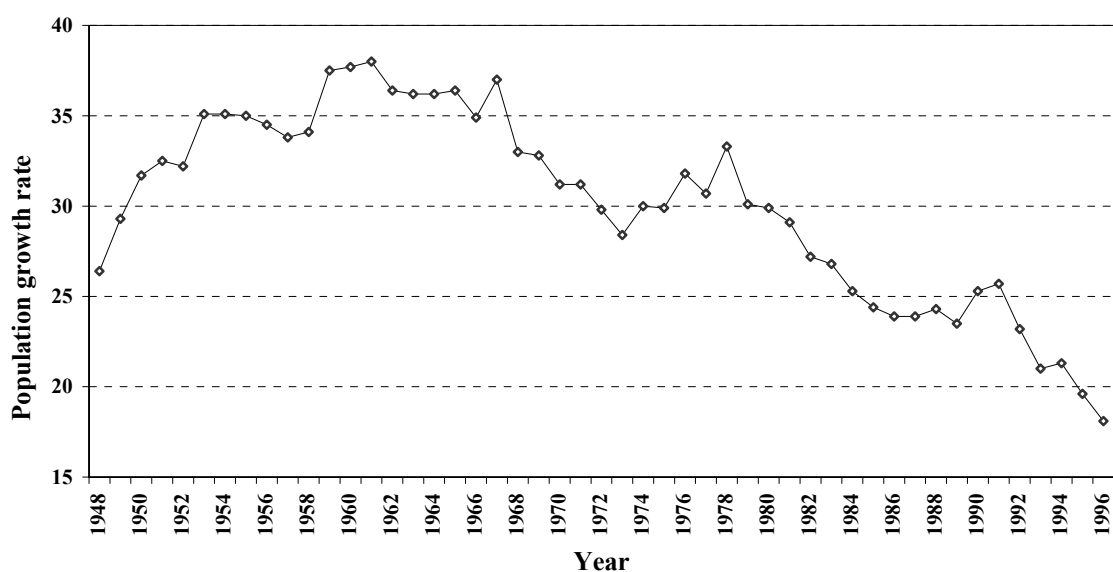


Figure 1.5 Venezuela's Population Growth Rates per 1,000 people from 1948 to 1996

Source: UN Demographic Yearbook

phenomena peculiar to Venezuela generated its reversals.

In Latin America and the Caribbean, the decline in the infant mortality rate preceded the decline in fertility, and the latter is, in part, the result of the spread of contraception and the use of abortion. Furthermore, fertility declines occurred in the context of rapid social change, characterized, among other things, by advances in the schooling of children, the growth of urbanization, and access to mass media. However, the mechanics of these patterns of social changes that have contributed to an increase in the rate of the fertility decline are largely unknown (Guengant 1996, 92).

During the 1950s and 1960s, Latin America had the world's highest rate of population growth, averaging 2.8% a year. Figure 1.5, which depicts population growth rates⁶ in Venezuela from 1950 to 1996, shows its rapid population growth between 1948 and 1967. It also reflects the expected lag that occurs as the decline in birth rates catches up with the decline in mortality rates, and the demographic transition matures in terms of lower reproduction rates. The rapid growth rate, therefore, resulted from the sharp declines in mortality, while fertility remained high and even increased. The stall and reversal of the fertility decline from 1973 to 1978 and again from 1987 to 1991 are easily identified when looking at the high population growth rates recorded over the same periods.

A look at a different measure of period fertility, the TFR, also offers evidence of the reversal of the fertility decline, but this evidence is not as compelling. The TFR is a measure of the average number of children a woman would have if she completes her fertility experience under the current period fertility conditions. Figure 1.6, which depicts the TFR for Venezuela, shows that it increases from about 5.5 children in 1950 to its peak of about 6.5 children in 1967 and then starts to decline from this peak to 2.9 children by 1996. This graph also confirms that even though the infant mortality rate decreases continuously from 1950, it takes 15 to 17 years for the TFR to start decreasing, as families start adapting to the lower death rate of infants. Figure 1.6 also offers evidence of a reversal of the fertility decline in the periods between 1973 and 1975 and again between 1989 and 1992.

⁶ The population growth rate is just the natural increase in population equivalent to the difference between the live birth rate and the total mortality rate and is also measured in per 1,000 population.

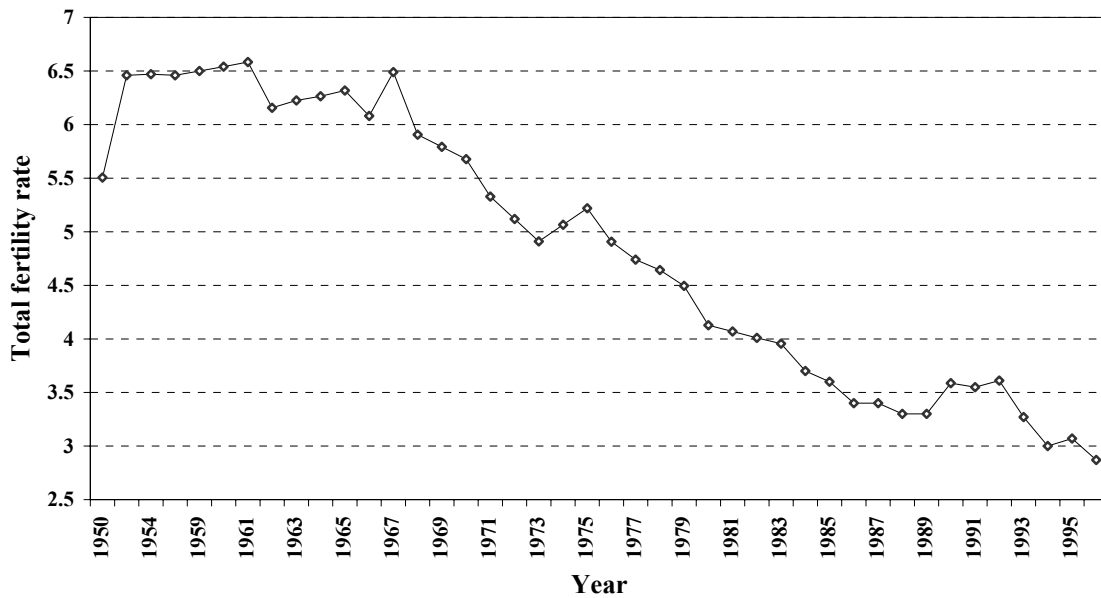


Figure 1.6 Total Fertility Rate in Venezuela from 1950 to 1996
Source: UN Demographic Yearbook

As has been known since the 1940s, the problem with standard measures of period fertility, such as the crude birth rate and the TFR, is that changes in the timing of childbearing distort them. Bongaarts (1999) notes that the effects of the timing of births, present in the fertility declines of less developed countries, temporarily inflate the total fertility of a population during periods when women bear children at an early age and deflate it when women postpone childbearing. Using an analysis of data from the World Fertility Surveys and the Demographic and Health Surveys, Bongaarts demonstrates that fertility trends observed in many less developed countries are likely to be distorted by changes in the timing of childbearing. In particular, the small but unexpected rise in the total fertility of Colombia in the early 1990s is attributed to a decline in the negative tempo distortion that prevailed in the 1980s. Although Bongaarts' study does not include Venezuela and, therefore, offers no insight into the characteristics or determinants of the Venezuelan fertility behavior, it is possible that the unexpected increases in the crude birth rate between 1973 and 1978 and between 1987 and 1991 in Venezuela reflect a temporal acceleration of childbearing or tempo effect. Therefore, deviations from the expected fertility decline in Venezuela point to the possibility that they may just be distortions of the standard measures of period fertility caused by changes in the timing of childbearing.

If, indeed, these reversals of the fertility decline result from a change in the timing of childbearing and, in particular, an acceleration of childbearing, then the question for the economist is: What socio-economic factor might have temporarily changed the economic conditions affecting an individual during the periods of the reversals to induce an acceleration of childbearing? There are many studies that attempt to connect changes in economic conditions affecting a household during a given period of time with changes in the timing of births. The following section looks at theories in some of the more recent studies that relate changing economic conditions to the timing of births and explores the circumstantial evidence linking extreme economic booms fueled by abnormally high oil prices to temporary increases in the speed of childbearing in Venezuela.

1.2. Oil Induced Economic Shocks of the 1970s and 1980s: Circumstantial Evidence of a Relationship with the Stall and Reversal of the Fertility Decline

Certain economic factors seem to coincide with the reversals of the fertility decline presented in the previous section. It is possible that extreme changes in the economic conditions that households face during a period of reversals are responsible for changing the timing of childbearing in Venezuela. Recent literature explores the relationship between the changes in the economic conditions affecting a household and the timing of childbearing. For example, it investigates such conditions as changes in the labor market and relates changes in labor market conditions to the timing of births. Although none of the literature focuses specifically on the situation in Venezuela caused by the abnormally high oil prices in the 1970s and 1980s, it provides useful insights for the hypothesis of this study.

Bloemen and Kalwij (2001) have developed a simultaneous analysis of the timing of births and labor market transitions affecting women in the Netherlands. They show that an increase in the years of schooling of a woman causes her to schedule births later in life, but does not significantly affect her completed fertility. Higuchi (2001) uses Japanese panel data to examine empirically the effect of changes in labor market conditions and income on the timing of marriage, childbirth, and employment. He finds that a high unemployment rate at the time of graduation tends to speed up the timing of

marriage and childbirth, whereas a decrease in the unemployment rate in the years following graduation delays the timing of marriage and childbirth. Kreyenfeld (2000) has investigated changes in the timing of first births in East Germany after re-unification and the relationship between male and female unemployment and first birth risks. She shows that, even after re-unification, first births for East Germans occur at a younger age than they do for their West German counterparts, and female unemployment in East Germany encourages the transition into parenthood. These studies all show there is a relationship between economic conditions reflected in the labor market and the timing of births.

Other studies focus on events that can cause a widespread change in the economic conditions faced by households and relate these changes to the timing of births. Schultz and Yi (1999) explore rural household responsibility system (HRS) reforms in China from 1979 through 1987 and assess the association of the local reforms with individual parity-specific fertility changes. They find that fertility appears to have increased slightly in 1982 through 1984, but declined in 1985 through 1987, in the wake of these significant economic reforms. Schultz and Yi hypothesize that the reforms increased the private monetary and opportunity cost of childbearing and intensified market competition for the adoption of new production technologies that encouraged parents to educate their

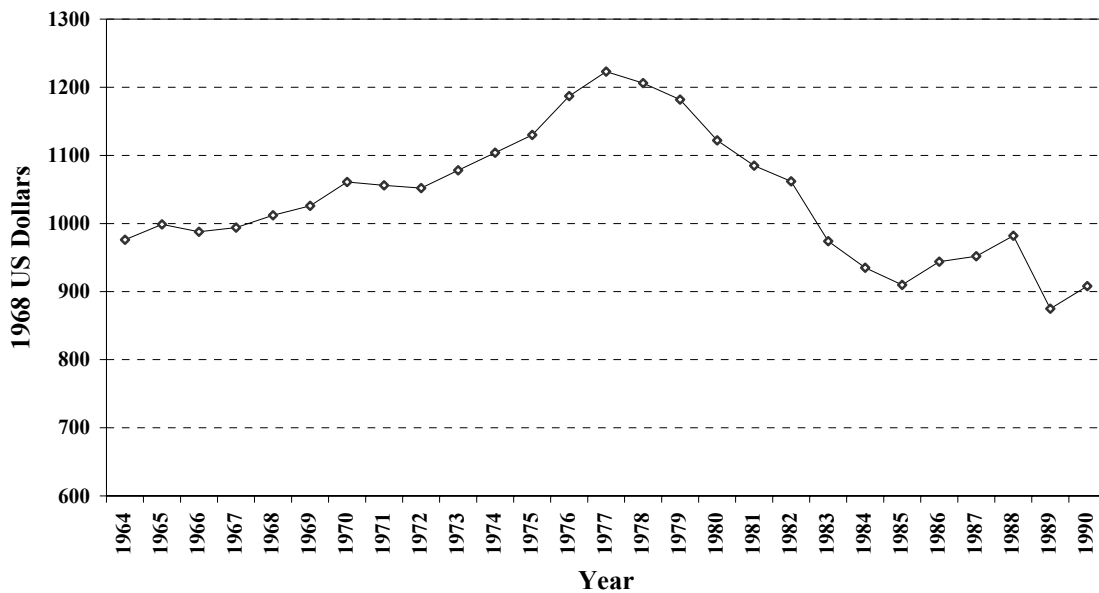


Figure 1.7 Venezuela's Real per Capita GDP in 1968 US dollars, 1964-1990

Source: Central Bank of Venezuela

children better, while increasing the mobility of the rural labor force, thereby discouraging and delaying childbearing among rural Chinese. Chase (1996) hypothesizes that the transition from a centrally planned to a market oriented economy alters the incentives offered to individuals as they make consumption and time allocation decisions. Families must reevaluate their fertility plans as a result of new wage structures, reduced government subsidies of the costs of raising children, and uncertainty from a changed economic environment. Chase uses micro-data from 1984 and 1993 in the Czech Republic and Slovakia to estimate a dynamic stock adjustment model, relating observed drops in fertility post-Communism to new wages, prices, and risks. He finds that earnings influenced the total demand for children during Communism through substitution effects for women's earnings and income effects for men's, but that earnings levels have little effect on fertility timing. All these studies suggest that economic factors can contribute to fluctuations in the timing of births.

Economic factors must, therefore, be considered as an explanation for the childbirth fluctuations during the mid 1970s and late 1980s in Venezuela, when it experienced a series of major economic events that probably altered the incentives influencing individuals' consumption and time allocation decisions, including changing the timing of childbearing. Although rich in natural resources, Venezuela's poor

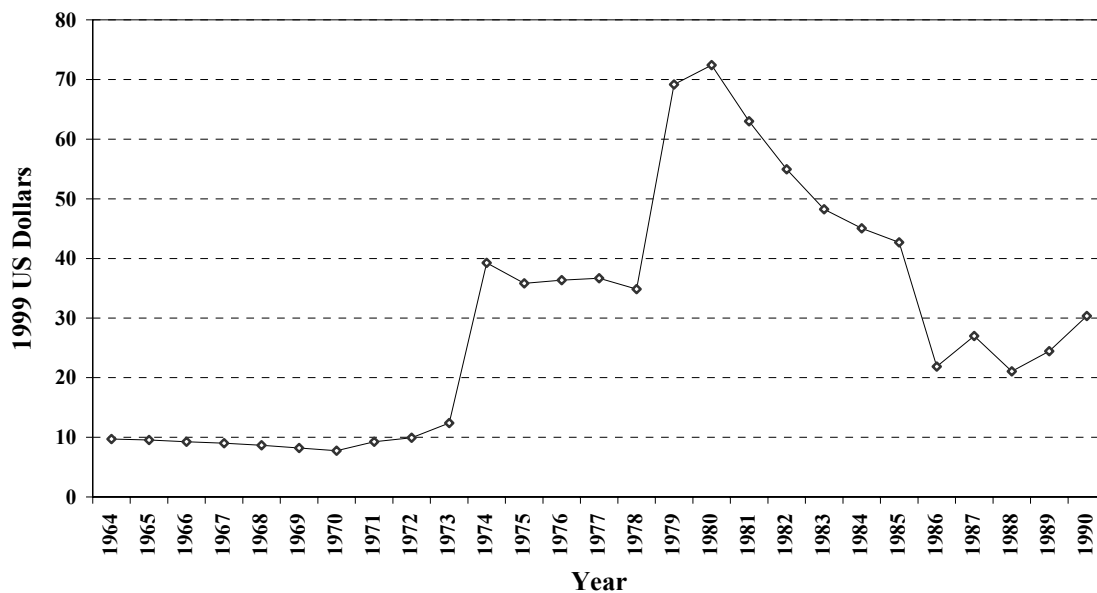


Figure 1.8 Crude Oil Prices in 1999 US dollars, 1960-1998. Source: 1960-1985 Arabian Light Posted at Ras Tanura and 1986-1998 Brent Spot

economic policies over the past three decades have led to a disappointing economic performance.

Figure 1.7, which depicts real per capita GDP in 1968 US dollars from 1964 to 1990, shows a relatively stable real per capita GDP from 1964 to 1972 at around 1,000 1968 US dollars. After 1972, the real per capita GDP grows substantially every year until 1978, going from 1,052 in 1972 to 1,223 1968 US dollars in 1978. This represents an increase of 16.25% during this period. However, this economic windfall reverses after 1978, and real per capita GDP falls every year from its peak of 1,223 1968 US dollars in 1978 to 910 1968 US dollars in 1985, a whopping decrease of 25.59% that erases all the gains of the 1970s. A second, but more limited, increase in real per capita GDP takes place after 1985 and lasts until 1988. Real per capita GDP grows from 910 1968 US dollars in 1985 to 982 1968 US dollars in 1988, an increase of 7.91%, before it falls back to the 1985 levels.

Figure 1.7 clearly shows that a temporary increase in real per capita GDP from 1973 to 1977, fueled by the 1973-1974 rise in oil prices (see Figure 1.8), was followed by negative real per capita growth each year from 1978 to 1985, despite a second round of oil price increases from 1978 to 1980. By 1985, even after the windfall gains of the two oil price increases and with prices still high, real per capita GDP was significantly below

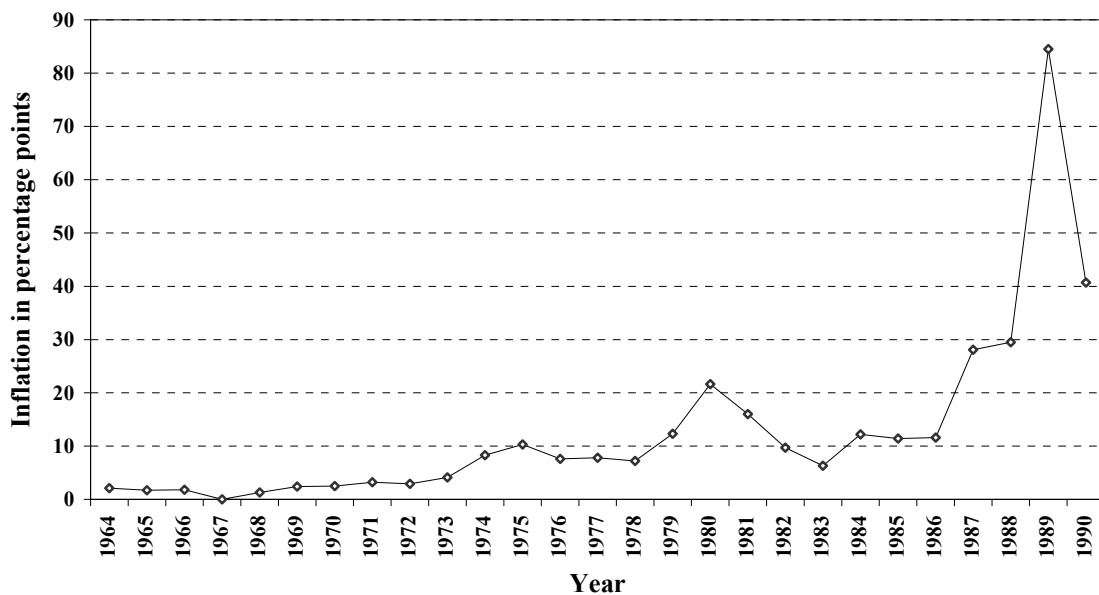


Figure 1.9 Venezuela's Inflation Rate, 1960-1990
Source: Central Bank of Venezuela

the 1972 level. In terms of real per capita GDP, this last clearly demarks a tremendous economic boom in the mid 1970s followed by a bust in the early 1980s. A second, but limited, temporary increase in the real per capita GDP occurs in the late 1980s as expansionary policies were followed from 1986 to 1988. These, however, were unsustainable, and inflation rose (see Figure 1.9), external reserves declined, and widespread shortages developed. These key moves of the Venezuelan macroeconomic environment characterize two well recognized periods of positive economic shocks experienced by the Venezuelan economy that can be largely attributed to the sudden price movement of the primary Venezuelan export, oil.

Tracing these periods of positive macroeconomic conditions helps to highlight how well they coincide with the stalls and reversals of the fertility decline documented in the previous section and introduces the possibility that such macroeconomic shocks changed the economic incentives influencing individuals' decisions, either through changes in wages in the labor market or the availability of transfers. One apparent result, a change in the timing of births, seems to link a positive shock fueled by abnormally high oil prices to this phenomenon.

This section hypothesizes that, in Venezuela, a positive shock fueled by abnormally high oil prices eventually changes the economic conditions influencing

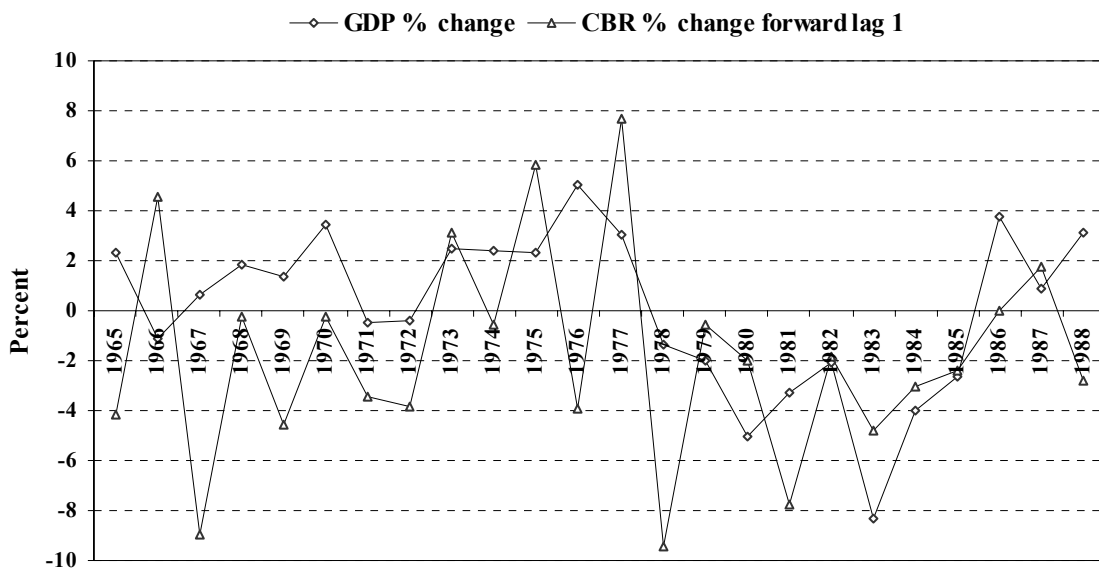


Figure 1.10 Percentage Change in real per Capita GDP and Live Birth Rate Lag of 1 Year, Venezuela 1965-1988

household decisions and induces Venezuelans to temporarily increase their period fertility by changing their timing of births. Figure 1.10, which depicts percentage changes in real per capita GDP along with percentage changes in the crude birth rate lag of 1 year from 1965 to 1988, clearly shows that the 1973-1978 boom, the subsequent 1979-1985 bust, and the limited 1986-1988 boom can be easily related to the stalls and reversals of the fertility decline in terms of the crude birth rate, as these two percentage changes seem to move together when looked at one year apart. Further, Figure 1.11, which depicts the percentage change in real per capita GDP along with the percentage change in TFR 1 year lags from 1965 to 1988, shows the same association. However, it does not seem to be as strong as the one observed between percent changes in real GDP and percentage changes in crude birth rates.

Examining tempo also helps to show how the timing of birth argument can be easily tied to the positive economic shock of the mid and late 1970's. Tempo gives a measure of how fast children are accumulated, and when computed over marriage cohorts, differences in the percentage of children already accumulated, a certain number of years after marriage, can be observed. If the oil shock of the mid and late 1970's is creating a positive income shock, females would be rushing to have children and an increase in tempo (percent of children accumulated three years after entering an union)

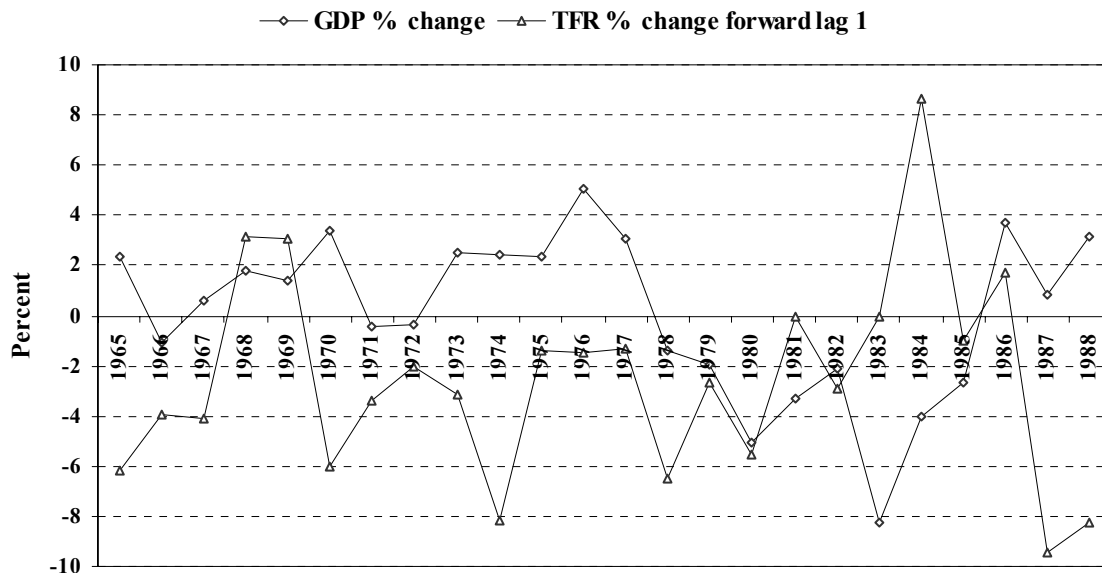


Figure 1.11 Percentage Change in real per Capita GDP and TFR Lag 1 year, Venezuela 1965-1988

would be observed during the oil boom and a decrease would be observed during the oil bust.

The 1998 National Survey of Population and Family collected in Venezuela by The Central Office of Statistics and Information is used to compute tempo for groups of females that entered a first union between 1967 and 1982. This survey contains complete birth and union histories that allow computing the number of children born to each female during the 14 years after entering the first union, dividing the number of children accumulated after three years by the total number of children accumulated after 14 years for each union cohort generates each cohort's tempo. Figure 1.12 depicts this tempo of fertility by union cohort. As expected, Figure 1.12 shows an increase in tempo from 26% for the 1967 union cohort to 34% for the 1974 union cohort, a 8 percentage points increased, which amounts to a 30.77% increased. Then, tempo drops to 29% for the 1979 union cohort to climb back to 34% for the 1982 union cohort. These changes in union cohort tempo are consistent with changes in timing of births due to the oil boom. Females marrying into the boom tended to accumulate their children faster during their first three years of marriage than females marrying into the bust.

Even though the evidence is circumstantial, this association between oil shocks, changes in the economic conditions affecting Venezuelan households, and the timing of

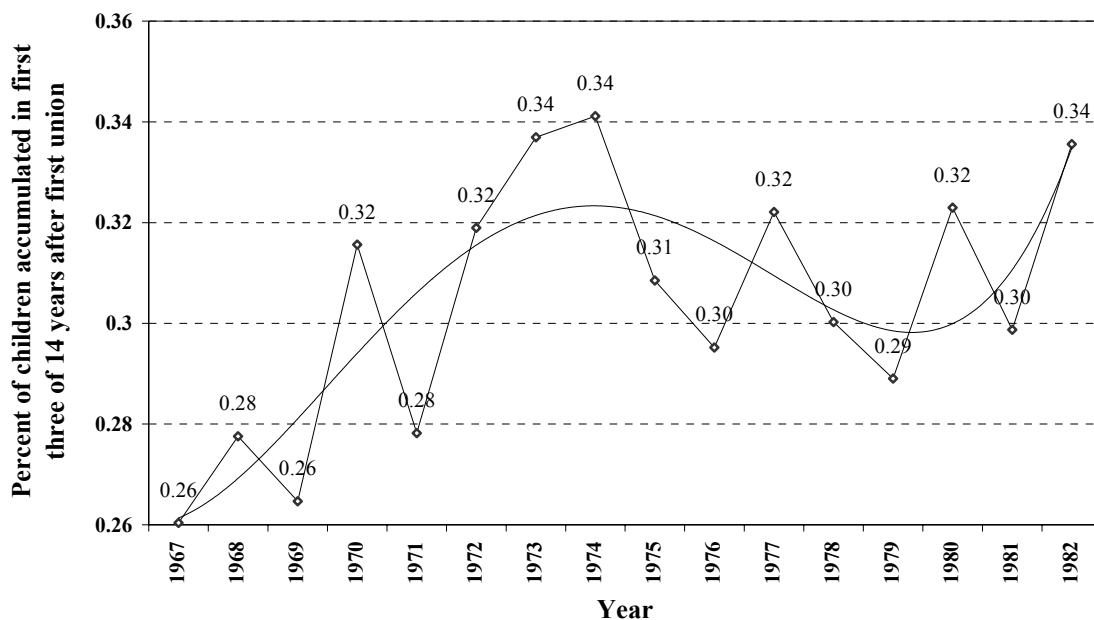


Figure 1.12 Tempo of Fertility by first Union Cohort

childbearing becomes more plausible when it is noted that some of the neighboring countries of South America have not experienced this phenomena. The exogenous nature of an economic shock induced by the unpredictable changes in the price of oil is also conceptually appealing, because if individuals could foresee the shock, they could plan for it and little change in behavior would be observed when the shock occurs. However, the exogenous nature of the shock allows the observation of changes in behavior, because it is an unforeseen event.

Finally, the mechanics of how sharp macroeconomic shocks filter into the household is crucial to exploring the changes in behavior. Such a shock, theoretically, can filter into the household in two ways, through changes in wages or through changes in direct transfers. The positive economic environment may enhance a household's income because of government transfers and higher temporary wages, mainly paid to males because of low female labor force participation during these periods. This, in turn, can overcome the substitution effect caused by higher temporary wages, as well as quantity/quality trade-off effects, thereby creating a temporary incentive for households to have children.

It is imperative to develop a model of fertility timing to formalize this hypothesis so that it is possible to use this model as a guide when evaluating the empirical evidence. Among other things, chapter three presents a simple model of fertility timing to formalize this idea. The model, an extension of a more basic stripped down model of fertility, captures issues of fertility timing between two periods in the context of changes in income either through changes in wages or transfers.

1.3. Summary

This analysis of the demographic transition in Venezuela highlights certain deviations from the norm, which expects a consistent fertility decline as the transition matures. In particular, the fertility decline stalls and reverses twice. When fertility is measured in terms of live births per 1,000 population, these stalls and reversals take place from 1973 to 1978 and 1987 to 1991. When fertility is measured in terms of the TFR, they take place from 1973 to 1975 and 1988 to 1992. Furthermore, these stalls and

reversals of the downward trend of fertility seem to have lasted only a few years, and when the trend resumes its course, it seems to do so at a faster pace.

These stalls and reversals of the decline in the period fertility rates point to an acceleration of childbearing. It is arguable that this acceleration, which distorts the period fertility rate, may be caused, in part, by the positive economic conditions seen in the real per capita GDP. The positive economic environment may enhance a household's income because of government transfers and higher temporary wages paid mainly to males because of low female labor force participation during these periods. This, in turn, may overcome the substitution effect caused by higher temporary wages and quantity/quality trade-off effects, thereby creating a temporary incentive for households to have children. However, the increased period fertility does not necessarily translate into an increase in lifetime fertility, because over time the increase in period fertility may cause a substitution effect of births once the effect of the temporary income dissipates. In turn, females will reduce fertility so that they end up having either the same number of children or fewer than they first intended to have, thereby compensating for the earlier increase in period fertility.

In other words, households decide to substitute having children during the positive economic shock for having them later in life as a response to the enhanced temporary income. The same situation, but reversed, can be observed during the bust years when households may delay having children, thereby substituting having children in the future for having them during the bust as a response to the drops in income caused by a negative macroeconomic shock. Chapter two analyses the determinants of total fertility in Venezuela and Chapter three presents a simple model of fertility timing that captures the issues hypothesized in this section along with an analysis of childbearing patterns in Venezuela to explore further the timing of birth hypothesis