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INVESTING IN CHILDREN:

CHANGES IN PARENTAL SPENDING ON CHILDREN, 1972 TO 2007

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Sabino Kornrich
United States Studies Centre
University of Sydney

Frank Furstenberg
Department of Sociology
University of Pennsylvania

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Sabino Kornrich
United States Studies Centre
University of Sydney

Frank Furstenberg
Department of Sociology
University of Pennsylvania

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Abstract: Parental spending on children is often presumed to be both one of the main ways parents invest in children and one of the main reasons children from wealthier households are more advantaged than children from poorer households. Given increasing income inequality, pressures to invest in children have likely grown over time. To track the extent of parental spending on children over time, we make use of the Consumer Expenditure Survey to examine how spending on children has changed over the period from the early 1970s to the late 2000s. We find that spending increased substantially over the period in large part because parents' spending on education increased substantially. Increases in expenditures have been particularly sharp among those near the top of the income distribution and the college-educated, while the share of income spent has increased sharply among those near the bottom of the income distribution as they attempt to maintain spending in the face of declining incomes.

During the final third of the previous century and the first decade of the new millennium, income and wealth inequality steadily increased in the United States and other wealthy nations, except for a short reprieve in the late 1990s (Danziger and Gottschalk 1995; Levy 1998;Gilbert 2008). A key question surrounding increases in inequality in the United States and elsewhere is the extent to which inequality will be recreated in the next generation – in other words, how much do increases in *current* inequality represent or contribute to increases in *persistent* inequalities? Given the importance of the intergenerational transmission of disadvantage for persistent racial and class inequalities, many researchers have turned to examining the consequences of growing inequality for the intergenerational transmission of advantage and disadvantage (Magnuson and Votruba-Drzal). Scholars continue to debate about why and how much different resources contribute to children's welfare (e.g. Mayer 1997; Duncan, Boisjoly, and Harris 2001; Duncan and Magnuson 2005), but broad consensus exists that children in families with more resources in the form of human, cultural, and material capital enjoy considerable advantages in their development and long-term prospects. As stratification grows, scholars and policy makers worry about the widening gap between rich and poor.

There is mounting evidence that parents of all social strata have become more aware and mobilized to invest in their offspring. Parents appear to know that children require more investment in the form of time and money than even in the recent past if only because changes in the labor market provide a greater premium for education and training. To advance their children's prospects, parents appear to have adopted a strategy of having smaller families and investing more in their children, as families have fewer children and both mothers and fathers report spending more time caring for children now than in the past (Bianchi 2000; Bianchi,

Robinson, and Milkie 2006; Gauthier, Smeeding and Furstenberg 2004; Sayer, Bianchi, and Robinson 2004; Yeung et al. 2001).

Yet time spent with children is not the only form of parental investment. Parents may also spend on a variety of goods and services to make investments in their children. Indeed, it is presumably differences in monetary expenditure that make up much of the advantage conferred by parents with more income and education. While changes in spending are likely an important component of changed investment in the face of increased social inequality, there is relatively little existing evidence about the how patterns of spending on children have changed over time and how changes are linked to changes in income inequality, family structures, and norms of parental investment.

This paper addresses the question of whether spending on children has grown over time and whether we can discern differential investments in children by income and education and by children's gender and age. To track changes in parental investments in children over time, we use a resource rarely exploited by sociologists or demographers: the Consumer Expenditure Survey (CES), a nationally representative survey of consumer spending conducted by the Bureau of Labor Statistics. Despite the potential importance of spending for understanding trends in parental investment in children, there has been relatively little research examining this question using this type of data (though see Lazear and Michael 1988; Lundberg and Rose 2004; Ziol-Guest, Kalil, and Deleire 2004). Our findings suggest that there have been substantial shifts in the patterning of expenditures on children, and that these shifts are primarily linked to income, children's gender, and the extent of parental investment as children age.

Measuring Parental Investment in Children

Along with time use, spending on children offers one of the most direct measures of parental investment in children. Parental spending buys children a variety of goods: residence in better neighborhoods, access to better schools, experiences which build human and cultural capital, and potentially high quality child care while they are young and parents are at work. As apprehensions about the value of public schools have grown, a growing percentage of parents have opted for private education, thus potentially incurring much larger expenditures than they once did. Similarly, the importance of higher education, financed entirely or in part by parents, has, no doubt, added to the costs of raising a child and extended the period of parental obligations. Similarly, parental strategies designed to offer children appropriate learning experiences at all stages of their life may drive up spending when children are very young. Many middle- and upper-class families today view structured market care as the best arrangement for their children. Hertz (1997, p. 376) notes that "couples speak a new language of quasi-psychology that emphasizes developmentally appropriate educational experiences for preschoolers who are introduced to the rudiments of a structured day, develop positive peer group experiences, and begin to develop a positive relationship to learning," suggesting the importance even at early ages of parental expenditures to provide learning environments. Lareau's (2003) work on differences in child-rearing reveals similar patterns. Lareau found that middle- and upper-class parents sought structured educational, social, and athletic activities for their children in order to impart them with experiences necessary for a middle-class upbringing.

Yet despite a variety of qualitative research suggesting increased pressures to spend, there has been relatively little quantitative research charting changes in parental investments and the determinants of these changes. One reason for the absence of research on trends in parental investment using the CES may be the difficulty of identifying specific expenditures on children

(cf. Folbre 2008; Lazear and Michael 1988). The CES does not specify the person in the household who incurred various expenditures, making it difficult to assign spending for individual goods and services. This problem is compounded for spending on joint goods like housing, food, and transportation.

One option, used by the United States Department of Agriculture (USDA) to construct estimates of the cost of raising a child to age 18, is to use allocation rules to assign household spending to children. The USDA allocates spending on food, transportation, health care using allocation rules generated from other surveys, allocates spending on goods with obvious child recipients on a dollar basis, and allocates other spending on a per capita basis (Lino and Carlson 2009). While this approach is useful in offering an estimate of the additional expenditures which a family might incur to raise a child, changes in estimates of cost may depend more on changes in prices than a decision to invest more in children. Additionally, the "cost" of children depends heavily on the choice of rules determining what share of expenses should be allocated to children (Slesnick 2001). In the USDA method, nearly half of the cost of raising a child to age 18 results from spending on food and housing (Lino and Carlson 2008).

Because we are most interested in spending on children that indicate investments, we choose to avoid this approach and instead focus only on spending on goods and services explicitly intended for children, like education, child care, and purchases of goods intended for children, such as clothing for boys, girls, and infants, and various toys and games. Details of the items we include in measures of spending are included in Appendix 1.

While the USDA's approach is largely an estimate of the cost of raising children rather than an estimate of expenditures, results using this approach suggest important patterns in household expenditures. Spending is tightly linked to household income, and spending is lower

in households with more children present, though this may represent economies of scale in the provision of joint goods (Lino and Carlson 2008). Finally, comparisons of spending in 1960 and 2008 suggest a shift toward greater expenditures on child care and education.

Explaining Change in Spending

Changes in aggregate spending may be understood in two ways. First, there are changes in the composition of spending – that is, what households buy with money they spend on their children. Second, there are changes in spending related to household characteristics, including the age of children. The first way of understanding spending tells us about how households invest in children – do they choose to spend more dollars investing in education or in other types of investments. The second type of shift tells us more about how changes in expenditures are divided over the course of childhood, adolescence, and early adulthood. To the extent that shifts in spending are linked to household characteristics, we can investigate how parents are responding to changing social demands on the family. A second important change in spending may be the timing of the spending – parents may choose to reallocate the amount of investment over children's life course. Thus, for example, parents could choose to invest heavily in children when they are young but relinquish responsibility at later ages, they could engage in continuous investment, or they could provide increased resources as children transition out of the parental home in order to help them establish independent lives, residences, and households.

One important determinant of spending on children is household income. Recent increases in income inequality have largely come through increasing incomes among those at the top of the income distribution and income stagnation among those at the bottom and the middle of the distribution (Levy 1998). Increasing income inequality may mean greater gaps between

the expenditures of parents with high incomes and those with low incomes, as greater income differences may translate into even greater differences in disposable income. On the other hand, households may smooth consumption by borrowing or spending savings, and, to the extent that parents feel stronger obligations to investing in their children now than in the past, there may be less growth in inequality of expenditure.

Yet the consequences of growing income inequality may not occur solely because of differences in income available for spending. Instead, we hypothesize that parental investment will increase over time because of growing pressures to invest in children, especially in children's education and training. As income inequality increases, so do worries about falling from the middle- and upper-classes (Ehrenreich 1989). We thus anticipate that per capita spending on children has increased disproportionately among more affluent and educated parents because of rising inequality. Parents in higher income brackets are both more able to invest in their children and increasingly uncertain about their children's future status.

A variety of research on spending on children suggests the importance of gender – both children's gender and the gender of the household "head." Women, more than men, seem to use household resources to increase spending on children. For example, when control of a child benefit in the United Kingdom shifted to the mother from the father, households spent more on women's and children's goods compared to men's (Lundberg, Pollak, and Wales 1997). Similarly, recent research using the Fragile Families data set finds that children are children are less likely to experience food insecurity when parents' pooled income is controlled by a mother compared to a father or joint control (Kenney 2008). While the Consumer Expenditure Survey does not contain measures of who controls income, marital bargaining perspectives suggest that husbands and wives will use their own incomes to spend on items they are more interested in (De

Ruijter, Treas, and Cohen 2005). To the extent that women's share of earned income has increased over time, we expect that households will make greater investments in children.

Children's gender may also influence spending. The presence of sons, rather than daughters, in the home influences a variety of marital outcomes, including stability, fathers' involvement, and gender traditionalism (Harris and Morgan 1991; Katzev, Warner and Acock; Lundberg and Rose 2002). In the 1990s, households with male children spent less on clothing and more on personal care services, and, at a low level of significance, spent more on housing (Lundberg and Rose 2004). While parents may have invested more in sons in the past, however, changes in gender norms may mean parents make roughly equal investments in male and female children at the present day.

We predict that expenditures will be divided more equally between boys and girls. In the past, male children may have been privileged, especially at older ages when they were provided more assistance in education. Growing norms about gender equality should be reflected in more equal allocation of investment for boys and girls. While the effects of children's gender are not our primary concern, these effects constitute an important component of change in parental investment. We descriptively show how spending has changed for households with only male and only female children.

Finally, over the past several decades, there have been growing pressures on families to provide assistance for post-secondary education. A growing body of evidence suggests that parents at all income levels perceive the value of higher education for their children's economic success and increasingly are willing to provide assistance to their offspring in late adolescence and early adulthood if they are going to school or starting out at an entry level job. Schoeni and Ross (2005) reported that a fifth of all expenditures on children living in the household are

provided to those over 18, and there are huge differences in the level of transfers by parents' income. Parents in all strata, according to this study, provide about 10 percent of their annual income to children over the age of 18. Thus, it appears, that parents are reconciled to the reality that it takes longer for their children to reach economic maturity than it did a half century ago (Danziger and Rouse 2007; Furstenberg et.al. 2004). We thus expect that growth in spending will occur primarily among older age groups, as parents extend support later into children's lives.

Data

To investigate changes in families' spending patterns over roughly the last quarter of the twentieth century, we rely on data from the Consumer Expenditure Survey (CES). The CES is a nationally representative survey of Americans' spending patterns which is administered by the Bureau of Labor Statistics (BLS) and is generally considered the best source of nationally representative data on consumption patterns. Conducted annually from the last quarter of 1979 to the present, before 1979, CES data were gathered only sporadically, with the most recent wave conducted in 1972 and 1973. Because of substantial differences in the format and method of data collection in the CES before the 1970s, we use the 1972-3 data as our starting point. We then rely on two-year blocks of data from more recent years to chart changes in the patterns and determinants of spending over time. We use the most recent set of data available at the time of writing, from the 2006 and 2007 survey years, and two sets of years which are equal in time from our endpoints: 1983-84, and 1994-95.[2]

Because the surveys are not identical over time, we harmonize them in several ways. First, in order to construct comparable measures over time, we aggregate measures of spending

[2] While we recognize that there were substantial differences in the economic climate over these four groups of years, additional analysis (available on request) suggests that the choice of year does not substantially affect results. We thus choose these years to provide comparisons over three similarly large periods of time.

into three comparable categories: spending on child care (which includes both babysitting and day care expenses), spending on education, and spending on all other specifically child-related expenses. The final category includes spending on clothes, toys and games, and other child-related expenses, such as infants' furniture. Differences in the data format also require harmonization. Surveys from all years are conducted over the course of four quarters. However, data from the 1972-73 survey are reported only in an annual format. For later years, household responses are reported on a quarterly basis. Because households are followed over four quarters, it is only possible to construct a true annual estimate for households which respond in all quarters. Substantial numbers of households are not present in the survey for all quarters – roughly 40% overall, with higher rates for selected subgroups like the never-married or the divorced (Lundberg and Rose 2004; Ziol-Guest, Kalil, and DeLeire 2004).

Existing research using the Consumer Expenditure Survey has typically used one of two approaches to deal with missing data. Most research relies on the analysis of households present in the survey for all four quarters which have fully reported income (e.g. Lundberg and Rose 2004; Ziol-Guest, Kalil, and DeLeire 2004; de Ruijter et al. 2005). Other research avoids dropping a substantial portion of cases by relying on data from only one quarter (e.g. Cohen 1998). While this avoids bias generated by the deletion of missing data, it means relying on only a portion of the data available.

In order to create annualized estimates of household spending without dropping large numbers of cases, we use data from all quarters a households is present in the survey and has children age 24 or younger present in the home, provided that the household does not have missing values for income[3]. We use the average of household characteristics for all quarters the

[3] For a variety of reasons, a small portion of households report the presence of children in the home in some quarters but not others. In cases where this occurs, we rely only on reports of data from the quarters in which children are

household is present. For annual measures, we multiply these averages by four. In addition to preserving cases, this has the benefit of not overweighting households with more remaining observations. The central drawback is that it eliminates within-household variation in spending across quarters, which could be associated with household change. While explaining both within-household and between-household variation would strengthen an account of spending on children, the goal of this analysis is to provide an overview of patterns of spending over time. Additionally, most variables are stable over the course of four quarters within households.

While this strategy deals with missing quarters of data, missing data may still exist for items individuals do not answer. To deal with these missing values, we use multiple imputation for missing data. Multiple imputation uses maximum likelihood techniques to generate values for missing data by using the relationships between variables for cases without missing data. Rather than generating one value, multiple imputation generates several estimates of missing values. Information from estimates is then combined to produce estimates of relationships between variables. For more information on these procedures, see Allison (2001) and Rubin (1987). For more details on the details of multiple imputation for this paper, see Appendix 2. Below, our descriptive results come from data with complete information, while regression results rely on imputed data.

Measures

Spending Measures

Spending in the CES is measured by self-report of expenditures over the past three months. In order to increase the accuracy of responses, households are visited prior to their first interview and asked to keep records to help them respond to the survey. The length of the

reported as present in the home, assuming that the non-reporting of children reflects a real change which would lead these households to not be 'susceptible' to spending on children.

reporting period could introduce downward bias in estimates of spending for irregularly occurring and small components of spending. For the items we consider, we expect that expenses will be either large enough or regular enough to prevent substantial downward bias.

We use the Consumer Price Index Research Series (CPI-U-RS)[4] to inflate expenditures to 2008 dollars (Sahr 2009). In order to provide comparisons across households with different numbers of children, we rely on a per child measure of spending. We use a per child measure rather than equivalence scales to deflate spending for additional children because the goods and services we examine are largely indivisible. Equivalence scales would take into account economies of scale that occur with spending on goods such as housing, food, or transportation. Economies of scale do not exist or are smaller for the spending we examine, so we measure spending per child.

We examine three primary categories of spending: child care, education, and other miscellaneous goods and services for children. Spending on child care includes spending on both day care and babysitting. Educational expenses include meals, board, and rent at school, tuition, fees, and books at college and at private elementary, middle, and high schools, and other educational expenses.[5] Finally, we include a category with spending on boys' and girls' clothes and accessories, infants' clothes and accessories, and toys, games, and other expenses. One weakness of this category is that the CES records spending on children's clothing only until age 15. After age 15, spending on all clothing intended for males is simply listed as male adult

[4] The CPI-U-RS is a new historical CPI series which takes into account methodological improvements in the method of calculating the CPI, such as the use of rental equivalence to measure homeowner costs and various quality adjustments for prices (Stewart and Reed 1999).

[5] One important question about educational expenses is the extent to which children go to college versus the extent to which parents are willing to pay to help them with college expenses. Due to the nature of our data, which simply show whether an expenditure occurred, we have no practical way of determining whether changes in spending result from changes in college attendance or changes in parental support given attendance. We suspect that both of these play a role in changing expenditures but are unable to differentiate the influence of each in this analysis.

clothing, and a similar change of definition occurs with clothing for women. Thus, spending on this category declines near age 16 for this reason in addition to ordinary declines in spending.

Independent Variables

Income: the CES includes a variety of measures of household income, including both earned and unearned income as well as income before and after taxes. We use the measures of final income before taxes for the post-1980 time periods, and the closest comparable measure – total family income – for the1972-73 data. Because these measures are total income, they include some measures of welfare benefits in addition to earned income, which should result in a slight equalization of income levels. While relying on after-tax income could result in greater equality, we expect that reporting of before-tax income will be more reliable than after-tax income and use this measure. In order to ensure comparability across time periods, we use the CPI-U-RS to inflate income to 2008 dollars. One caveat about this measure of income is important. To ensure confidentiality, the CES censors data near the top of the income distribution (and near the bottom of the distribution for the 1972-73 data). Thus, estimates of income we provide are not exact, but are a rough average taking censoring into account.

Wife's share of income: to gauge the effect of women's provision of income to the home on spending on children in two-parent households, we measure the proportion of reported earned income from the wife. For single-parent households, we set the measure to zero and introduce an additional set of controls for family structure to differentiate these households from male breadwinner households.

Family structure: we use three dichotomous variables to examine the effect of different types of family structures: one for single-mother families, one for single-father families, and one for all other families which are neither two-parent households nor the previous two categories.

The last category includes, among others, households in which multiple generations reside in one household.

Wife's work status: while wife's share of income partially controls for wives' employment, we introduce two dichotomous variables to control for wives' time in addition to their monetary contributions. These variables measure whether a wife is at work part-time or full-time, with the reference category being a household in which wives report no work.

Education: because education may change parental incentives to spend on children, we also control for parents' educational level. For the 1972-73 data, the head of the household is always listed as the husband, and we use the education of the head of the household. To maintain consistency, we also use educational level for husbands in the later data. For single-parent households, we simply use the education of the parent in the household. We include variables for completion of high school, attending some college, and a college degree or higher. We do not differentiate between the completion of college degrees and advanced degrees because the latter category does not exist in the 1972-73 data.

Children's characteristics: finally, we control for a number of characteristics of children in the home. First, we include a measure of the age of the youngest child in the home to examine the link between children's age and spending. We also include a squared term to capture nonlinearities in this relationship. Because more children may mean that there resources need to be stretched farther, we include a measure for the total number of children age 0 to 24 in the home.[6] In supplementary analyses, described below, we examine the effects of children's gender.

Results: Changes in Spending

[6] We experimented with the inclusion of measures of the number of children in different ages groups but found that these measures did not substantially improve model fit.

We begin by presenting descriptive results on spending on children from birth to age 24 for the four time points in our study to establish a basic understanding of how spending on children has changed. These results are in Table 1 and Figure 1. Table 1 shows average household spending for all households with children age 0 to 24 for each year, and the share spent on each of the different categories of goods. Figure 1 shows average per capita spending among households which have a youngest child in each age group for three aggregate categories: child care, education, and children's clothes, toys, and other goods. As an example, for the early 1970s, Figure 1 shows that households in which the youngest child was age twelve spent on average six hundred dollars on education, a small amount on child care, and roughly an additional seven hundred dollars on toys, games, clothes, and other accessories. Because we include households with more than one child, these results do not necessarily reflect spending on a child of each given age. Indeed, many households have older children, offering an explanation for educational expenditures at the youngest ages.

[Table 1 Roughly Here]

[Figure 1 Roughly Here]

Figure 1 and Table 1 show three important patterns. First, spending increased substantially from the early 1970s to the late 2000s, although much of the increase in spending occurred between the early 1970s and early 1890s, with increases after the 1980s at a slower rate. While these gains occurred across the entire distribution of households with a child in the home, they are especially prominent among households with older children only. The estimate for total

spending in households where the youngest child is age 24 increased from roughly 700 dollars in the early 1970s to around 2000 dollars in the late 2000s.

Second, while spending increased substantially, not all components of spending increased similarly across time. While the amount of expenditures on children's toys, clothes, and games increased slightly from the early 1970s to the early 1980s, the share spent on these goods declined substantially after this period, replaced by spending on education and child care. While some accounts of the commercialization of youth suggest that the advent of a consumer culture targeted to children in the 1980s led households to spend frivolously on consumer goods (Schor 2004), these results do not provide support for this perspective. Rather than spending on consumer goods, parents appear to invest in children's futures by spending on child care and education.

Third, we note that the link between children's age and spending has changed over time. In the early 1970s, the two ages with concentrated spending were directly before age 16 and after age 18, and spending was lowest in households with very young children or those of college age. In the early 1980s, in contrast, spending is roughly constant across children's age, although there is a temporary decline after age 18. In the 1990s and 2000s, spending is highest when children are either young or nearing leaving the household – spending is lower on children between the ages of six and twelve. More than in the past, parents are spending earlier and extending their support for children into the later ages. Below, we investigate whether this trend continues when controlling for household characteristics.

In addition to these basic breakdowns in spending, however, we highlight changes in spending across the income distribution. Figure 2 and Table 2 show spending by income deciles both in constant (year 2008) dollars and as a proportion of household income. Figure 2 shows

that expenditures on children in absolute dollars have increased over time regardless of households' position in the income distribution, although the amount of change has been strikingly different for the rich and the poor, with contemporary rich households in the 2000s spending far more relative to both the rich of the past and the contemporary poor.

[Table 2 Roughly Here]

[Figure 2 Roughly Here]

Table 2 shows the same shift for spending, income, and spending as a proportion of income. While there is a general increase in spending on children, when spending is measured as a proportion of household income, the increase is particularly sharp among the bottom three deciles of the earners. Spending on children as a proportion of income increased sharply between the early 1970s and mid 1990s, especially for low-earnings households. For those in the second decile of earners, spending more than tripled from 2.8 percent of income to nearly 6 percent of income though this declined to under 5 percent by the late 2000s, while those in the third decile more than doubled spending as a proportion of income from roughly 2.4 percent to 5.3 percent, with this figure declining by the mid-2000s. The increase in spending as a proportion of income results in part because these households spend more on their children over time. However, the greater cause of an increase in share of income spent is that households in these income deciles have lower inflation-adjusted incomes than comparable households near the bottom of the income distribution had in the past. Thus, while they invest similar amounts of money in inflation-adjusted dollars, this investment has taken up an increasingly larger share of their incomes.[7] Indeed, the slight decline in the proportion of income spent that occurs between the

[7] For the lowest income decile, however, some of the apparent decline in income is due to the BLS practice of bottom-coding income in the CES data in 1972-73, abandoned at later time points. Roughly the bottom 5% of cases had their income bottom-coded to protect confidentiality, inflating average incomes in this group in the earliest time period.

1990s and the 2000s is largely attributable to slight increases in income which occur over this time period. Clearly, while parents at all points in the income distribution were spending more, and spending more of their income, on children, households near the bottom of the income distribution felt a greater burden as more of their income went to children.

Parental Investment by Gender of Child

In order to capture the effect of children's gender on spending, we compare households with only male children present to those with only female children present. These results, in Table 3, show changes in parental investment in children for households with only male and only female children. In the early 1970s, parents in households with only male children spent significantly more than parents in households with only female children, with a gap of roughly two hundred dollars in spending. Nearly all of the additional spending occurred because parents were spending more on education in households with only male children. Indeed, this is the only category which shows substantial significant differences in spending. Results from the 1980s and 1990s show that overall spending had roughly equalized, but that there were still a few differences in the target of parental expenditures. In the early 1980s, households with only female children spent significantly more on children's accessories (though substantively the difference was relatively small. In the 1990s, households with only female children spent significantly more on daycare, though again households spent roughly the same total amount.

By the 2000s, however, these data suggest that households with only female children spent substantially more than did households with only male children. Indeed, in three of the four categories we examine there were significant differences, and the overall difference was large and highly significant. To check whether these differences might be caused by other correlated

differences between households on characteristics related to spending like household income or education, we also ran t-tests on the set of independent variables we use in the overall regression analyses below. These results generally showed few differences between households, with two exceptions. The percentage of households with less than high school degree was slightly higher among those with only male children (15% compared to 13%), with the difference significant at p=.045, though there were no significant differences for other educational categories. Households with only male children also had slightly older children – on average half a year older (significant at p=.015). Given the overall lack of significance, we expect that these two small differences are not responsible for the substantial differences we observe in spending. While we are uncertain whether these trends will persist in the future, they suggest a substantial reversal in the targets of parental investment, as households with only female children now spent more than households with only male children.

[Table 3 Roughly Here]

Because this is a subset of households with children which consists exclusively of children of one gender, these results are not perfectly comparable to those for our other results which examine all households with children. Nonetheless, these results suggest important changes in parental investments in male and female children over the period we consider.

Multivariate Results

We use regression analysis to examine how shifts in spending patterns are linked to the age of the youngest child in the home, parental income, and other household characteristics,

notably women's labor force participation status and earnings, parental education, the number of children per household, and family structure. We present regression results in which we regress spending per child on independent variables, pooling the four years into a single analysis to enable tests for differences in coefficients across the years we examine. These results are in Table 4 – coefficients and levels of significance for 1972-3 are for that year, while other coefficients and levels of significance are for differences between later years and the earlier time period. Means and standard deviations for each year are included in Appendix 3.[8]

[Table 4 Roughly Here]

The results from these regressions reveal a variety of changes in spending between the early 1970s and later periods, but also some continuity. Indeed, examining the intercept suggests that net of the changes in other variables (and the effects of those variables), there had been a substantial increase in parental spending on children. The coefficients for later period are significant, leading us to reject the null hypothesis that there had been no change in spending, and large, suggesting substantial increases in spending.

Perhaps the largest shift which occurs is in the pattern of parental spending by the age of the youngest child in the home, even when controlling for a variety of other household characteristics which might be related to decisions to spend. In the early 1970s, the positive and significant coefficient for the age of the youngest child and the negative coefficient for age squared suggest that, controlling for other household characteristics, spending is low when

[8] Household income declined in these data after 1972-73, and did not return to earlier levels even in the early 1990s. While we are somewhat concerned that differences in the coding and reporting of income across these years lead to this result, we also note that children experienced substantial increases in poverty over the course of the 1980s and 1990s (Levy 1998), so these results are consistent with declining incomes among households with children.

children are quite young and as they are much older, with the highest spending when they are in their teenage years. As in the descriptive results, however, this relationship reverses over time, as shown by the negative coefficients (significant for the 1990s and 2000s) for the age of youngest child and the positive coefficients for age squared. These suggest that in these later periods, spending was highest when children or old and young, but that parents invested less in children in the middle ages. This concords with a vision of investment on educational experiences in college and in early life which have become more widespread and expensive over time.

The coefficient for household income was also significantly different in later periods compared to the earliest period. While the effect was positive and significant in each individual time period, these results suggest that the effect of income was greatest in the early 1990s. While the effect in the 2000s was greater than in the 1970s, it appears that the relationship between income and spending had become somewhat less sharp, controlling for other household characteristics.

Parental education also changed substantially over the time period.[9] Households in which parents had attended some college or held a college degree both spent significantly more – about 650 dollars more –than households with no high school degree in the early 1970s. However, the size of this difference increased significantly over time, with households with a college education in the early 1980s estimated to spend nearly 1500 dollars more than households with no high school degree (652.12+819.30 =1461.42).

Other results suggest more continuity than change. The proportion of earnings provided by the wife was positively and significantly related to spending in the early 1970s. Results for later years do not reveal significant differences for coefficients for the proportion of earnings from, though tests for significance performed on each of the years separately failed to reach

[9] As noted earlier, we rely on the husband's education in two-parent households to maintain consistency with coding from the 1972-3 data.

conventional levels of significance. While some of the coefficients reach statistical significance, wives' work status had little overall impact on parental spending, as coefficients for the effect of wives working full-time failed to reach significance in any of the time periods, and the coefficients for wives' working part-time were significantly different than the early 1970s in the 1890s and 2000s, though the increase in spending was relatively small. Variables for wives' work status failed to reach statistical significance, with the singular exception of the coefficient for wives working part-time in the early 1980s. While this may come as a surprise, given child care expenses which households often incur when wives participate in paid labor, child care expenses represent a relatively small proportion of overall expenditure across the life course, and households may spend more on other categories when they do not spend on child care.

Finally, we consider the effects of family structure on spending. In all years, the presence of more children in the household meant lower per child spending, although this effect again grew larger over time. Single mother families, on average, spent significantly more per child in the early 1970s. While coefficients for later decades are negative, they fail to reach statistical significance, so we fail to conclude that there these coefficients are significantly lower than the positive effect observed in the early 1970s. Finally, neither single father families nor those in "other" families – consisting of all those outside of two-parent or single-parent families with their own children present – did not spend significantly differently in any of the three time periods.

Conclusion

Using data from the Consumer Expenditure Survey, we examined changes in spending on children over time to measure trends in parental investment. Rather than considering the share of

all of households' expenses which are attributable to children, we focused on expenditures which can largely be earmarked for children and thus provide a close approximation of parents' monetary investment in their children. By doing so, we were able to track shifts in parental investment over time and investigate some of the sources of those shifts – both in terms of the composition of spending and family characteristics associated with spending.

At the outset, we anticipated that increasing income inequality would lead to increased pressure for parental investment in children, leading to greater expenditures on children over time. Indeed, we find that spending has increased substantially, both in inflation-adjusted dollars and as a proportion of income. To the extent that increasing income inequality means increased chances for downward mobility among the children of the rich, parents at the top the income distribution might respond by increasing investment in children. We find some support for this expectation: indeed, parents near the top of the income distribution increased spending more than those in other groups. Yet much of this effect appears to be a result of more rapidly increasing income among those at the top of the income distribution, as spending as a proportion of income remained similar among households in the top earnings deciles.

As a proportion of income, spending increased most sharply among households near the bottom of the income distribution. Faced with declining incomes but continued pressure to invest in children, parents in these groups saw ever-larger *share* of income devoted to spending on children. Spending in real dollars changes little, but the necessity of spending on children at the bottom of the distribution consumes an ever larger proportion of household income given declines in real income among these households.

In addition to shifts in parental investment linked to changes in the income distribution, we note several other important trends in spending on children. First, the greatest shift in the

composition of spending has been to greater spending on education. While education has always been an important component of spending on children, increasing tuition and shifts in the time parents expect to financially assist children have led to substantially greater spending on education. Second, we note that parental investment in boys and girls had shifted substantially from the early 1970s to the present day. While parents in households with only female children spent significantly less than parents in households with only male children in the early 1970s (a result driven largely by spending on education), by the 1990s spending had nearly equalized, and by the late 2000s, girls appeared to enjoy a significant advantage. Finally, we find that the shape of parental investment over the course of children's lives has changed over this time period as well. Parental investment in the late 1990s was most intense when children were quite young and when they were already in the mid-twenties.

The trends that we identify support other data suggesting that in the race to the top, higher income families are at an ever greater advantage because they can afford to absorb the growing costs of childcare and pre-school spending and the huge and growing costs of post-secondary education. While this paper fails to take account of public subsidies aimed at reducing the costs for low-income families, the actual costs are borne by the family impose a growing burden on low and moderate income families whose incomes have stagnated over the past several decades. It seems evident that unless these constraints on less than advantaged households are reduced, the children of low and moderate income families will continue to lose ground.

It is possible, of course, that low and moderate income families will adapt by having fewer children as they perceive the growing increased costs of raising and launching offspring. If that is true, we might expect to see a more rapid decline in fertility in coming decades among the poor

and near poor. Were this to happen, the outcome of lower fertility might aggravate the already existing problem of an aging society that cannot manage the burden of caring for the elderly.

Appendix 1: Consumer Expenditure Survey categories.

Educational Expenses
Meals at School, Board at School, Rent at School, Tuition, Fees, Books at College Tuition, Fees, Books for Private Elementary, Middle and High Schools, Miscellaneous Educational Expenses

Clothes and other Expenses
Boys' Clothes and Accessories, Girls' Clothes and Accessories, Infants' Clothes and Accessories, Toys, Games, and other Expenses

Child Care
Day Care, Babysitting

Appendix 2: Details of Multiple Imputation Procedures

Multiple imputation uses existing information in a data set to help generate plausible values for missing data, generating several data sets which are then analyzed. Information from these data sets is then combined to produce estimates of coefficients and standard errors. While there are a variety of techniques used to generate estimates, the most commonly used is maximum likelihood estimation, which we use as implemented in the proc mi procedure in SAS.

Our primary concern for imputation are missing values for household and individual income. Because individuals often report education, weeks, and hours worked even when they do not report individual incomes, we make use of these variables to help impute missing values for individual and household earnings. We also rely on husband's and wives' ages and their total expenditures to help impute values for each of their incomes. For households which do not have earners present, we perform imputations separately, as the relationships between variables should differ between single-parent and two-parent households.

We then use imputed values to generate the share of earnings from the wife. To do so, we first round imputed values of income below zero to zero instead. While rounding may generally lead to bias in parameter estimates (Allison 2001), it is necessary in this case because we use these variables to construct a ratio, and extreme values in the ratio lead to substantial uncertainty in parameter estimates.

Appendix 3: Means and standard deviations of variables used in regression analysis. Numbers may not match others listed perfectly because of multiple imputation for missing data.

	1972-3		1983-4	
	Mean	**SD**	**Mean**	**SD**
Total spending	1208.60	1831.87	1712.69	2769.81
Age of youngest child	9.34	7.16	9.15	7.19
Income (in thousands of dollars, adjusted to year 2008)	138.59	160.72	135.41	159.58
Proportion of earnings from wife (set to zero for households other than two-parent households)	56.39	31.95	52.84	39.79
Wife works part time	.13	.21	.31	.37
Wife works full time	.31	.46	.29	.45
Not a high school graduate	.14	.35	.13	.33
High school graduate	.35	.48	.35	.47
Some college	.14	.35	.20	.40
College degree or higher	.16	.37	.23	.42
# of children age 0-24	2.44	1.52	2.00	1.14
Single mother family	.12	.32	.12	.32
Single father family	.01	.12	.01	.11
"Other" family – includes households with other family members present	.01	.11	.14	.35

	1994-5		2006-7	
	Mean	**SD**	**Mean**	**SD**
Total spending	2080.56	3953.67	2217.06	4823.68
Age of youngest child	8.86	7.00	9.13	6.92
Income (in thousands of dollars, adjusted to year 2000 dollars)	127.41	155.76	131.29	153.12
Proportion of earnings from wife (set to zero for households other than two-parent households)	57.10	44.59	71.49	67.93
Wife works part time	.37	.39	.40	.39
Wife works full time	.26	.44	.23	.42
Not a high school graduate	.17	.38	.18	.38
High school graduate	.35	.47	.27	.44
Some college	.24	.42	.29	.45
College degree or higher	.24	.43	.27	.44
# of children age 0-24	1.98	1.09	1.99	1.09
Single mother family	.14	.34	.13	.34
Single father family	.02	.13	.02	.14
"Other" family – includes households with other family members present	.18	.38	.20	.39

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Table 1: Average spending per child by year and proportion of expenditures in each area for all households with children age 0 to 24.

	1972-3		1983-4		1994-5		2006-7	
	$	p	$	p	$	p	$	p
Children's Accessories	463	.42	694	.41	761	.37	616	.28
Education	479	.43	676	.39	859	.41	1066	.48
Day Care	19	.02	172	.10	296	.14	409	.18
Babysitting	145	.13	170	.10	164	.08	126	.06
Child Care total	164	.15	343	.20	461	.22	535	.24
Total Spending	1106	1.00	1713	1.00	2081	1.00	2217	1.00
n	10181	10181	7177	7177	7223	7223	9067	9067

Table 2: Income in 1000s of dollars, spending on children and spending as a percentage of household income, by income decile: 1972-73, 1983-4, 1994-5 and 2006-7. Dollar figures adjusted to year 2008 dollars using the CPI-U-RS

Income Decile	1972-3			1983-4		
	Spending	Income (in 1000s)	Percent of income spent	Spending	Income (in 1000s)	Percent of income spent
1	529	11.8	4.48	1,193	6.4	18.63
2	658	23.4	2.80	923	15.5	5.97
3	781	33.0	2.37	962	23.5	4.09
4	826	41.2	2.01	1,229	31.7	3.88
5	964	48.5	1.99	1,551	40.4	3.84
6	980	55.9	1.75	1,512	49.4	3.06
7	1,193	64.1	1.86	1,661	59.7	2.78
8	1,293	74.0	1.75	2,137	72.0	2.97
9	1,617	88.1	1.84	2,398	90.1	2.66
10	2,219	123.9	1.79	3,651	139.8	2.61
		1994-5			2006-7	
1	1,072	5.6	19.23	1,028	7.5	13.79
2	892	14.7	6.06	941	19.3	4.87
3	1,199	23.4	5.13	1,142	28.7	3.97
4	1,399	32.8	4.26	1,249	37.8	3.31
5	1,561	42.3	3.69	1,344	48.7	2.76
6	1,768	52.7	3.36	2,012	61.1	3.30
7	1,922	65.3	2.94	2,133	75.0	2.85
8	2,311	79.8	2.90	2,573	92.9	2.77
9	3,262	100.3	3.25	3,747	121.0	3.10
10	5,658	154.9	3.65	6,331	224.5	2.82

Table 3: Comparison of spending in households with only female and only male children age 0 to 24. All spending figures are in adjusted (2000) dollars.

	1972-3			1983-4			1994-5			2006-7		
	All male children	All female children		All male children	All female children		All male children	All female children		All male children	All female children	
Children's Accessories	517.5	512.3		722.1	810.9	**	796.7	862.6		607.6	710.8	***
Day Care	28.6	21.2		210.1	216.2		312.1	403.1	*	431.9	494.5	
Babysitting	201.4	194.3		205.3	213.5		183.3	186.7		109.9	158.1	*
Education	762.7	532.3	***	790	791.1		1111.8	968.2		1104.2	1415.3	*
Total	1510.1	1260	***	1927.5	2031.7		2403.9	2420.5		2253.5	2778.7	***
n	2313	3024		2290	2032		2293	2082		2918	2670	

Note: *:p<.05, **: p<.01, ***:p<.001, two-tailed t-tests for differences in means, performed with assumption of unequal variances. Totals may not equal sum of components due to rounding.

Table 4: Regression Results, Pooled Analysis using imputed data. R-square=.18.

			Differences from 1972-73 shown for each year below					
Year	1972-3		1983-4		1994-5		2006-7	
Intercept	386.51	**	705.09	***	1092.28	***	1062.86	***
Age of youngest child	51.69	**	-48.41		-118.71	***	-147.01	***
Age squared	-2.92	***	1.82		4.60	***	6.31	***
Household income (in 1000s of dollars)	16.15	***	-0.60		9.42	***	4.04	**
Proportion of earnings from wife	511.84	*	-200.94		-280.00		-431.44	
Wife's work status (in two-parent households)								
works part-time	-10.24		286.00	*	93.40		436.92	***
works full-time	101.65		317.95		222.80		131.24	
Parental education								
High school graduate	78.31		98.43		-7.15		32.38	
Some college	261.29	*	249.35		128.44		356.94	*
College degree or higher	652.12	***	819.30	***	741.60	***	975.08	***
Number of children in household	-201.38	***	-205.67	***	-355.16	***	-334.67	***
Single mother family	574.79	***	-424.39	*	-247.18		-144.04	
Single father family	377.50		-81.73		-2.39		-456.63	
Other family type	58.73		-209.21		-336.55		-350.47	

Notes: : *:p<.05, **: p<.01, ***:p<.001, two-tailed t-tests. Significance levels for 1972-3 are for the hypothesis that the coefficient is equal to zero while tests for other years are tests of whether the coefficient is significantly different than the coefficient for 72-73.

Figure 1: Spending on education, child care, and children's toys, games, and clothes by year and age of youngest child in the household. Spending for all years is inflated to year 2000 dollars.

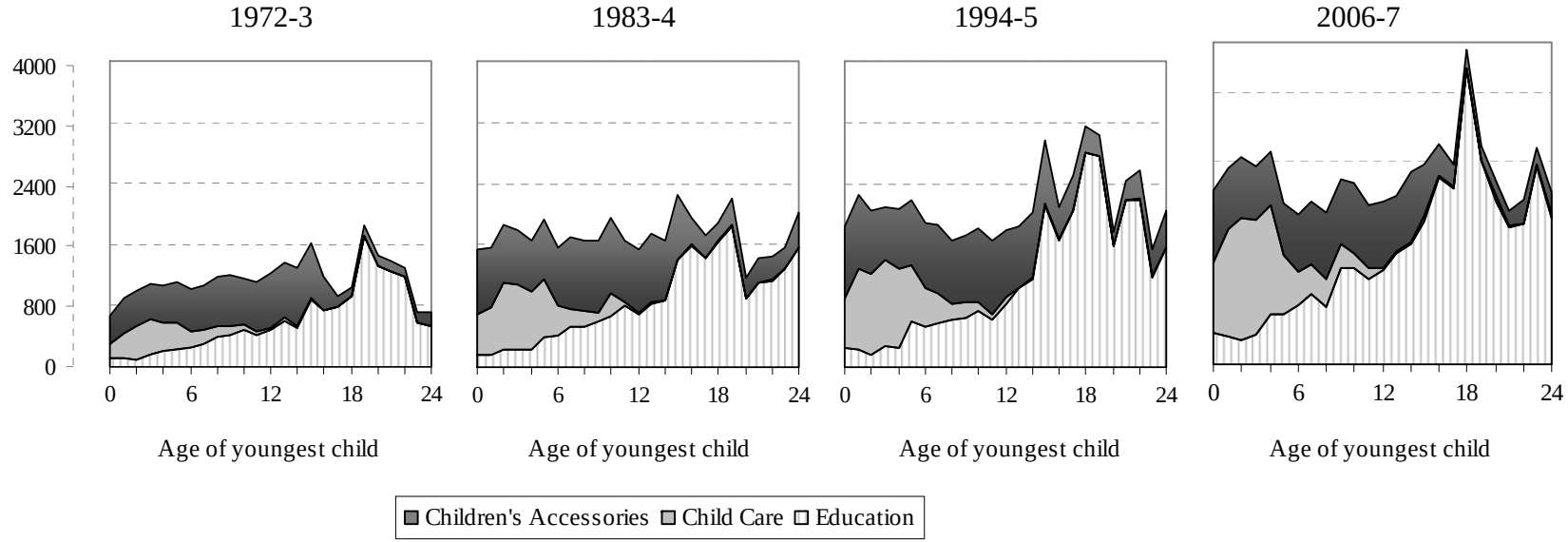


Figure 2: Spending by Income Decile:

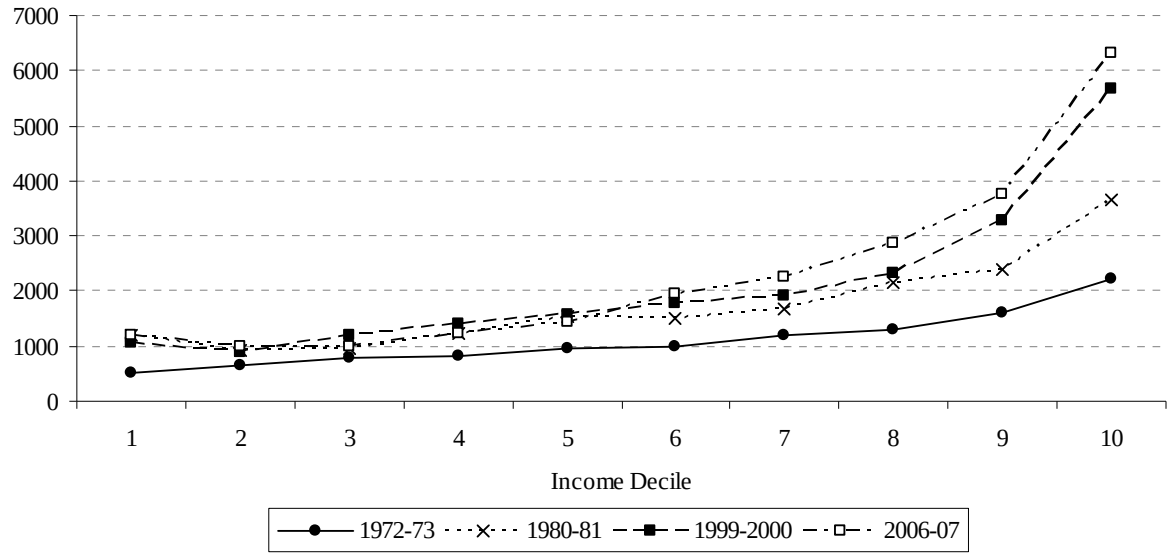
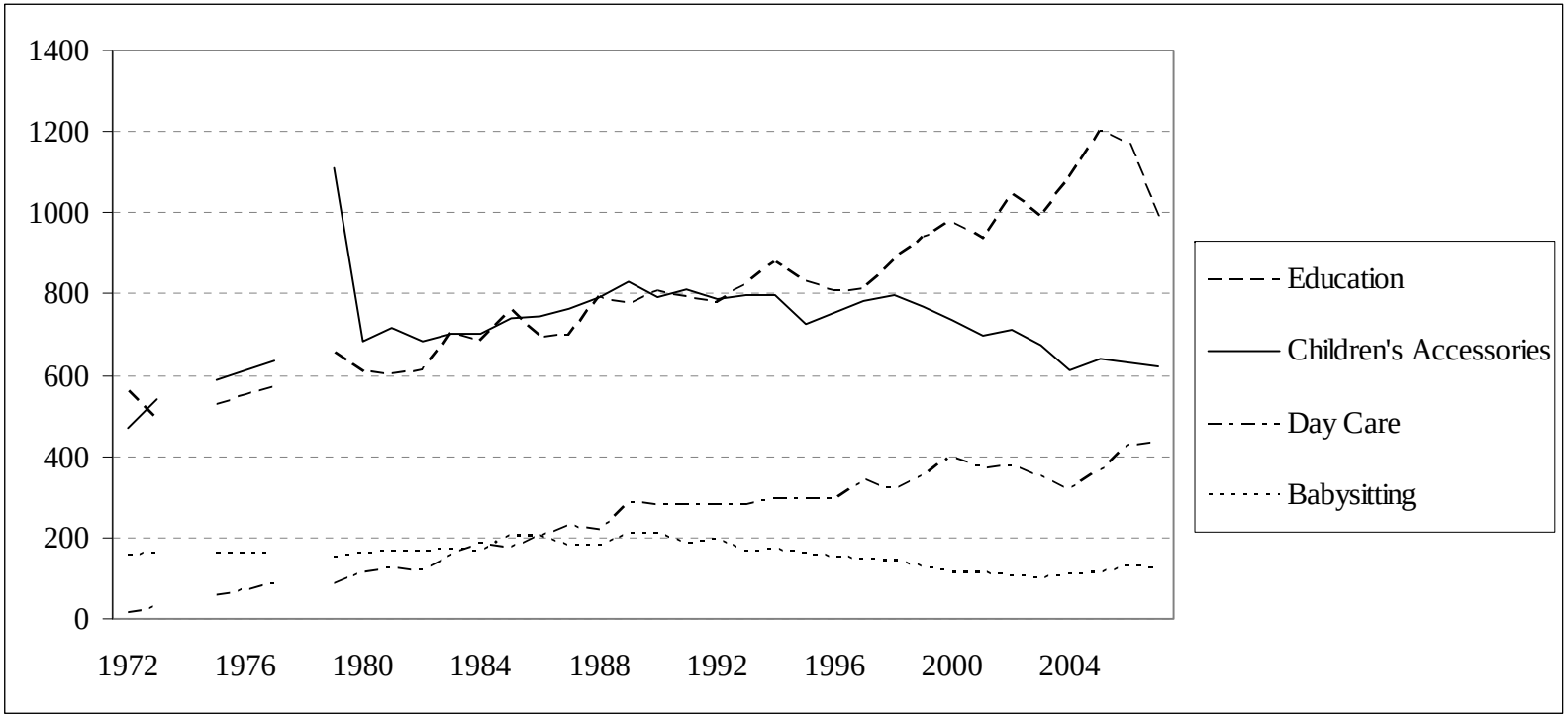


Figure ?: Trends in spending over time.



Note: the unusually high value for spending on children's accessories (clothes, toys, and games) reflects the fact that the only months present in the survey are October, November, and December, and spending on these goods is higher in these months due to holiday gift-giving. Values between 1973 and 1979 are linear interpolations from the 1973 to the 1980 observations. (1980 used because of the unusual sample period for 1979).

United States Studies Centre
John Woolley Building (A20)
The University of Sydney NSW 2006
T: +61 2 9351 7249 | **F:** +61 2 9351 6877 | **E:** info@ussc.usyd.edu.au
www.ussc.edu.au