

What explains the rapid increase in childcare time:  
A discussion of Gary Ramey and Valerie A. Ramey's "The Rug Rat Race"

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Gary Ramey and Valerie Ramey establish the important fact that time spent by parents in childcare, after remaining stable for decades, rose dramatically during the 1990s and reached a plateau in the 2000s. As Ramey and Ramey document, these changes are large by any metric, comparable to the decline in hours worked during the Great Recession. Moreover, this increase in childcare time was uneven: college-educated mothers' childcare time grew by 9 hours per week, while less educated mothers' time grew by 4 hours per week.

Ramey and Ramey argue that the only viable explanation for this relative growth among well-educated parents is a college rug rat race. Demographic pressures and increasing returns to higher education in the 1990s squeezed college-educated parents, whose children had in the past been virtually guaranteed a seat at institutions of higher learning. Competition for increasingly scarce slots at these colleges drove parents to spend ever more time in childcare as they attempted to separate their own children from the pack.

This is a creative explanation that resonates with many contemporary accounts of parenthood and higher education. If correct, the college rug rat race has stark policy implications: the relative growth in childcare time does nothing to improve well-being; it is the result of parents hoping to transfer "college surplus" from other children to their own. This wasteful

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activity potentially comes at an enormous cost: Ramey and Ramey estimate that the rise in childcare represents over \$300 billion in forgone wages annually.

To assess the social value of this \$300 billion increase in childcare, it is useful to consider the alternative explanations that might have generated it. We posit three categories of explanations, each with different implications for social welfare: the rug rat race, investment-based explanations, and consumption-based explanations. If the rise in childcare hours is due exclusively to a rug rat race—which need not necessarily derive from college competition—the additional time spent in childcare is wasteful.<sup>2</sup> Investment-based explanations, in contrast, suggest that the increase in childcare is generating valuable returns for the next generation. Parents may be increasingly eager to invest in their children because of perceived increases in labor market returns to cognitive and noncognitive skills. Although socially beneficial, childcare-as-investment also means that college-educated parents' children, advantaged to begin with, will enjoy even greater levels of human capital than their peers, and thus the rising gap in childcare hours by education may portend widening inequality. Consumption-based explanations are more benign, suggesting that the relative rise in childcare among the well educated is no more alarming than a relative rise in expenditure on cars or computers would be. Instead, childcare-as-consumption points to other possible causes for the increase in childcare, for example changes in the structure of American families and the rise of hedonic marriages (Stevenson and Wolfers 2007, 2008).

In this discussion we first offer some comments on Ramey and Ramey's evidence for the rug rat race as a driver of the increase in time spent in childcare. We show that, quantitatively, their evidence suggests the rug rat race can account for at most a modest fraction of this rise. We

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<sup>2</sup> Ramey and Ramey note that parents may underinvest in children in the absence of a rug rat race if investment in children generates positive externalities. In this case the rug rat race may operate like a Pigouvian tax, correcting the underinvestment, and therefore be socially efficient.

then present evidence on the importance of investment and consumption in the rise of childcare time.

Ramey and Ramey present an impressively broad array of evidence for the rug rat race. First, they show that the trends in high school cohort size and college competitiveness match the trends in childcare during the 1990s. Second, they point to the large rise in time spent transporting children and caring for older children. Third, they compare trends in childcare time by race and nationality. Finally, they use cross-sectional evidence on competition for college admission across states to demonstrate that college-educated mothers spend more time on childcare where college competition is greater.

Taken together, this evidence suggests that increases in college competition are playing a role in the rise in childcare, but there are some important caveats. First, although the childcare and cohort crowding time series match nicely in the 1990s, the two series are negatively correlated between 1965 and 1985, a period when childcare time was flat and graduation rates rose and then declined. Overall, the correlation between the size of the graduating cohort and the difference between childcare time among college-educated and less well educated mothers during the period Ramey and Ramey are studying is a negligible -0.06.

The second piece of evidence concerns relative changes in the components of childcare time and the importance of time spent in transportation. Ramey and Ramey emphasize that the rug rat race explains the rise in the differential trend between college-educated and less educated parents, and that an important component of the increase in the differential is “time spent on *older* children...transporting them to their activities” (emphasis in original). We find, however, that the increase in the differential trend was steeper among mothers with young children than

among mothers without young children, and that the increase in time spent in transportation occurred nearly equally for college-educated and less educated parents.

To assess the role of older children and travel time in the rise in the differential trend, we reestimate Ramey and Ramey's basic regression but exclude time spent on travel. We plot the college  $\times$  year interactions estimated from this exercise in figure 1, along with the original coefficients. The two patterns are very similar, and the regression results suggest that travel time may explain around 10 percent of the relative rise. Increases in travel and chauffeuring children constitute about 10 percent of the overall rise in childcare, but this increase in chauffeuring is unlikely to be a direct result of an increase in competition for college. In particular, college admissions offices do not directly observe parents chauffeuring children, and parents with a high value of time could simply make other transportation arrangements—hiring a driver or sending their child by taxi. Yet many parents have stated that such outsourcing would generate disapproval from other parents.<sup>3</sup> This social pressure for “homemade” transportation may reflect a rat race, but not a college-centric one.

In figure 2 we reestimate Ramey and Ramey's basic regression separately for mothers with children younger than 5 and mothers whose youngest child is 5 or older. College-educated mothers with young children experienced a much sharper increase in childcare time: the educational differential in childcare time rose by 6.6 hours per week for these mothers compared with 2.6 hour for mothers without young children.<sup>4</sup> This comparison suggests that college competition may not be responsible for a large share of the rise in childcare time.

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<sup>3</sup> Valerie Ramey noted this during the Brookings Panel discussion. Judith Warner (2005) has also pointed to the tendency of mothers to judge and ostracize each other.

<sup>4</sup> These differentials are the rise in the difference in childcare time for college-educated versus less educated mothers between the periods 1965-95 and 1998-2007, adjusting for age, for parents with and without young children.

Ramey and Ramey's third line of evidence comes from comparing trends in the United States with those in Canada, and, within the United States, between blacks and whites. They show that despite a similar upward trend in time spent in childcare among Canadian parents without a college degree, there has been no relative increase among college-educated Canadian mothers. The Canadian data illustrate the robustness of the upward trend in childcare documented by Ramey and Ramey. Canadian parents, like U.S. parents, are now spending several more hours a week interacting with their children. However, the college gap in childcare is more difficult to interpret. Before the rise in childcare in the 1990s, the gap in hours spent in childcare between college- and non-college-educated mothers was less than an hour in the United States, but over 7 hours in Canada. The gap has since widened in the United States to around 5 hours, while falling in Canada to around 3 hours. Ramey and Ramey point to this fact as evidence of an increase in college competition in the United States. However, this explanation says little about why the educational gap shrank in Canada or why it was so much bigger in Canada to begin with.

Finally, Ramey and Ramey find evidence for the rug rat race in the relationship at the state level between college competitiveness in 2004 and parental childcare time in 2003-2007. The results show that well-educated parents provide more childcare in states where college competition is greater, as their model predicts, but, so do less well educated parents. The coefficients on childcare time are similar for both groups, as judged by either statistical or economic significance. These findings suggest that college competitiveness does potentially drive parental time in childcare, but they offer inconclusive evidence as to whether such competition impacts college-educated parents' behavior differently.

The authors' cross-state evidence provides a useful benchmark for assessing the magnitude of the relationship between college competitiveness and time spent in childcare. We extend their results to assess how much of an increase in childcare time is implied, given the increase in competition for college that has occurred nationally. Figure 3 replicates Ramey and Ramey's figure 10, with three additional data points. The first is the national level of college competitiveness in 2004, which we estimate by taking a population-weighted average of competition at the state level. The second is the national level of college competitiveness in 1992, estimated similarly using state-level data from Bound, Hershbein, and Long (2009). The third point shows what the level of competitiveness would have had to be to explain the difference in childcare time between 1992 and 2004 for college-educated mothers. Bound, Hershbein, and Long's index of college competitiveness implies an increase of 0.25 between 1992 and 2004. Applying this increase to Ramey and Ramey's cross-sectional results implies that college-educated mothers' childcare time should have risen by about half an hour per week.

In sum, the college rug rat race is a potential source of the increase in childcare time both relatively and absolutely, but it appears able to explain only a modest share of the rise. We now consider investment- and consumption-based explanations.

Some of the most productive investments parents make in their children occur at young ages, as parents lay the foundation for future learning by inculcating strong habits and cognitive skills in their children. Since parental time is an essential input to these investments, and since the returns to cognitive skills rose over the 1990s (Cunha and Heckman 2008), increases in parental investment in children could be an important part of the relative and absolute rise in childcare time.

Indeed, most of the relative increase in childcare time has been concentrated among families with young children, as figure 2 shows. To further investigate time spent on young children, we study trends in breastfeeding, which likely represents an investment and certainly does not contribute (directly) to college success.

In its 1988-91, 1991-94, and 2005-06 waves, the National Health and Nutrition Examination Survey (NHANES) asked respondents whether the youngest child in the household was breastfed. We study the percent of children that were ever breastfed and the percent that were breastfed through 6 months of age, by education of the mother. Table 1 shows that between the late 1980s and early 1990s, college-educated mothers were increasingly likely to breastfeed their children, and that the gap between college- and non-college-educated parents widened and then narrowed between 1991-94 and 2005-06. The same is true for the percent still breastfeeding at 6 months. At that age, children of college-educated moms born in the early 1990s were 50 percent more likely to be receiving breast milk than children in the previous decade, and more than half of all college-educated mothers were still breastfeeding.

Could the rise in breastfeeding reflect a broader emphasis on childcare? If breastfeeding requires little effort, then trends in breastfeeding might not reveal much about overall attitudes toward childcare, whereas if breastfeeding is time intensive, then an increase in breastfeeding might indeed reflect an increased parental emphasis on childcare. Surprisingly few data exist on the time cost of breastfeeding. To estimate this cost, we conducted a survey and advertised it on the website facebook.com and the *New York Times* 'Freakonomics' blog.<sup>5</sup> The survey generated 2,099 responses. In no sense are these data necessarily representative of the general population, but they provide rough evidence on time spent breastfeeding.

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<sup>5</sup> The survey can be seen (and taken) here: [wharton.qualtrics.com/SE?SID=SV\\_e2NOBSudMtPELFW&SVID=Prod](http://wharton.qualtrics.com/SE?SID=SV_e2NOBSudMtPELFW&SVID=Prod). We used responses collected between March 12 and March 17, 2010.

We measured breastfeeding rates and intensity over time by asking about the breastfeeding of the latest child and noting when he or she was born. As in the NHANES, breastfeeding rates have increased over time; more interesting, so has breastfeeding intensity, which we report in table 2. Mothers spend a considerable amount of time breastfeeding, well over 2 hours per day on average. Breastfeeding thus requires an enormous time commitment; mothers who breastfeed may be more likely to spend a great deal of time on other childcare activities as the child ages. These results hint at the potential for a cohort-based explanation for the rise in childcare time, since college-educated mothers of infants in the early 1990s were the first wave of parents to experience the rise in childcare time, and these mothers may have developed habits from their time-intensive breastfeeding activity. If such a habit formation cohort-based model explains the trends identified by Ramey and Ramey, it offers a clear prediction for the future: the gap in time spent in childcare by parental education should narrow over the next decade, since the breastfeeding differential has narrowed in recent years.

To understand the rise in breastfeeding better, we asked mothers why they breastfed. The most common response, chosen by 96 percent of mothers, was for the health of the baby. Thirty-eight percent said they breastfed to improve their baby's intelligence. (Mothers could give more than one reason.) These answers clearly indicate an investment motive for breastfeeding, but breastfeeding also has a consumption component: two-thirds of mothers breastfed to bond with their infant, and half breastfed for enjoyment.

Even if the absolute and relative rise in childcare time does not represent investment, it need not be wasteful if parents enjoy the time they spend with their children, that is, if the increase in childcare time represents consumption. We present two pieces of evidence that point to the importance of consumption motives in explaining the absolute and relative rise in



childcare time: first, changes in time spent in play account for a nonnegligible fraction of both the absolute and the relative rise; and second, college-educated parents spend relatively more time on childcare with their spouses. The increasing importance of childcare as a source of consumption is consistent with both the rise of hedonic marriage among college-educated couples and the apparent geographic dispersion in children's college attendance.

Ramey and Ramey note that parents enjoy playing with their children and that increases in this activity may be indicative of rising consumption. "Playing with children," they write, "has always ranked high in terms of enjoyment." Their table 3 shows that after excluding play time, the relative differential remains large but has fallen by about a quarter, suggesting that time spent in play accounts for an important fraction of the overall relative rise in childcare time. In fact, play time accounts for about a quarter of the overall rise as well as of the relative rise.

The second piece of evidence supporting a consumption-based explanation is that college-educated parents spend a great deal of childcare time together, relative to less well educated parents.<sup>6</sup> The 2003-07 ATUS allows researchers to identify with whom the respondent performs a given activity, and we use this information to count up the hours of childcare time. If the rise in childcare time is due to college preparation, then one would not expect well-educated spouses to spend childcare time together, but if the rise in childcare time is about enjoying family time, then one might well expect well-educated parents to engage in childcare time together.

College-educated mothers spend much more time in childcare with their spouse, and college-educated fathers somewhat more, than do less educated mothers and fathers, respectively. We regress childcare time with spouse against a set of parental education indicators and Ramey and Ramey's age dummies; the results (table 3) show that college-educated parents

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<sup>6</sup> We look at the difference at a point in time, rather than changes in this difference, because older surveys lack the "with whom" data necessary to see whether parents spend their childcare time together.

spend 4.6 hours of childcare time per week with their spouse, compared with 2.5 hours for less educated parents. College-educated mothers spend 2.5 more hours in childcare with their spouse, and college-educated fathers spend 1.5 more hours. These differences are large, equal to nearly half the relative rise in childcare time.

Adam Isen and Stevenson (2010) discuss the rise of hedonic marriages and the fall of “productive marriages,” particularly among well-educated couples. Whereas a traditional view of marriage emphasizes the gains from specialization in the production of children and household goods (Becker 1981), hedonic marriages generate “marital surplus” in the form of complementarities in consumption: spouses enjoy spending time with each other. To the extent that spouses enjoy spending time in childcare with each other, the rise in hedonic marriage can explain a substantial fraction of the relative rise in childcare time. Since college admissions offices do not observe how many parents engage in these activities with their children, it is unlikely that college competition is driving the increase in joint parenting time. These results are only suggestive, however, because it is not known how time spent in childcare with one’s spouse has trended over time.

An additional potential explanation for why parents, particularly college-educated parents, may be spending more time with their children relates to the increased distance that students now travel to attend college. The children of college-educated parents are more likely to travel long distances to college. Table 4 shows that the distance traveled to college rises steeply with the education of the parents. In response, these parents may spend more time with their children while they are small, either to make up for lost time in the future or to build a relationship with them, to ensure that they come home for visits. Although data on changes in the distance traveled to college over time are unavailable, Caroline Hoxby (2009) has argued that

college has become more of a national market, and thus that college entrants, particularly the children of college-educated parents, may be increasingly likely to attend college far from home.

In sum, Ramey and Ramey find an important shift in parents' time allocation, but their preferred explanation, the college rug rat race, can explain only part of this shift. We propose a taxonomy of alternative explanations, each of which is consistent with at least some of the rise in childcare time. A key priority for future work is to distinguish among these explanations. The difficulty in explaining the rise in childcare time is that it happened so suddenly, whereas the possible driving forces, such as competition for college, the rise of hedonic marriage, and the increasing importance of cognitive and noncognitive skills, have all changed gradually (Hoxby 2009, Cunha and Heckman 2008). The sudden rise in childcare time suggests a tipping dynamic. This might arise because the value of childcare time depends on what other children are doing. If every child can play in the park, then no parent need closely watch her own child, because of safety in numbers.<sup>7</sup> But if other children are with their parents, then no parent can unilaterally send her child to the park unattended. As parents grow increasingly vigilant, the equilibrium level of childcare could shift rapidly upward. If tipping dynamics are important, then any of the possible driving forces could be important in explaining the growth in childcare time.

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<sup>7</sup> Christopher Sims pointed this out at the Brookings Panel discussion.

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**Table 1. Share of Mothers Breastfeeding, by Education of Mother, 1988-2006**

Mother's education	Percent of mothers who ever breastfed			Percent of mothers breastfeeding at 6 months		
	1988-91	1991-94	2005-06	1988-91	1991-94	2005-06
Completed high school	37	35	61	44	38	44
Completed college	74	86	88	43	64	61
Difference	37	51	27	-1	26	17
Standard error of the difference	5***	4***	4***	7	6***	5***

Source: Authors' calculations.

a. Estimated using the 1988-94 and 2005-06 waves of the NHANES, restricted to female respondents with no missing information. All numbers adjust for differences in the age distribution of college-educated and less educated women. Asterisks indicate statistical significance at the \*\*\*1 percent level.

**Table 2. Average Time Spent Breastfeeding during Child's Infancy, by Education of Parent**

Hours per day	Year of birth of youngest child				
	Before 1980	1980s	1990s	2000-05	2006-10
Mother's education					
High school diploma or less	1.3 (0.4)	1.7 (0.5)	2.8 (0.5)	3.0 (0.5)	3.1 (0.3)
Bachelor's degree	2.5 (0.5)	2.5 (0.3)	2.8 (0.2)	2.8 (0.2)	3.0 (0.1)
Master's degree	2.6 (0.5)	2.5 (0.3)	2.5 (0.2)	2.6 (0.2)	2.9 (0.1)
Professional degree or Ph.D.	2.3 (0.4)	2.6 (0.3)	2.2 (0.2)	2.6 (0.2)	3.2 (0.1)

Source: Authors calculations' based on data obtained via online polling. The survey can be seen (and taken) at [wharton.qualtrics.com/SE?SID=SV\\_e2NOBSudMtPELFW&SVID=Prod](http://wharton.qualtrics.com/SE?SID=SV_e2NOBSudMtPELFW&SVID=Prod). Table is based on responses collected between March 12 and April 5, 2010. Standard deviations in parentheses.

**Table 3. Regression-Based Estimates of Time Spent in Childcare with Spouse, by Education<sup>a</sup>**

Hours per week	College-educated parents	Less educated parents	Standard error of the difference
All parents	4.6	2.5	0.1***
Mothers	5.8	3.3	0.1***
Fathers	3.0	1.5	0.1***

Source: Authors' regression using data from the 2003-07 ATUS.

a. Estimates obtained by regressing number of hours of childcare time per week on indicators for age categories as well as for college attainment from Ramey and Ramey (this volume). Sample restricted to nonstudent respondents aged 18-64 with a child younger than 18 present in the household. Asterisks indicate statistical significance at the \*\*\*1 percent level.

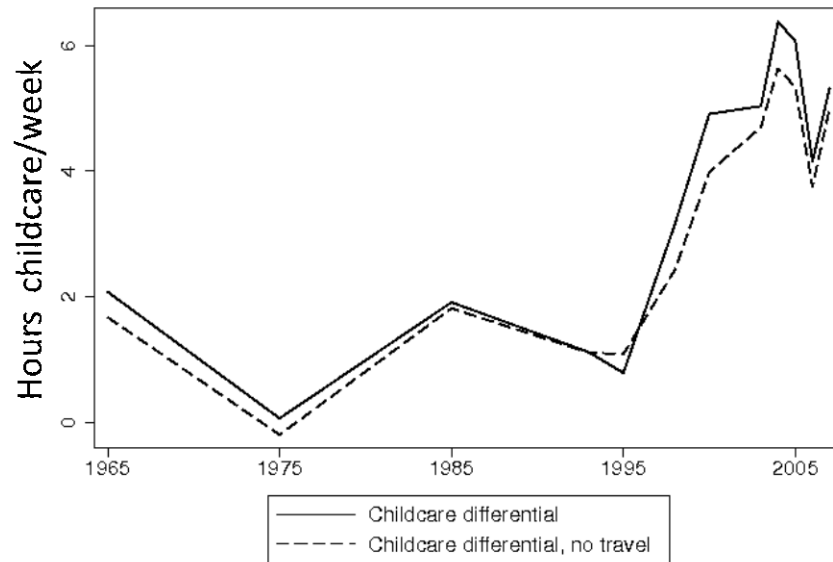
What explains the rapid increase in childcare time?

**Table 4. Distance Traveled to College, by Education of Parents**

Parental education	Median distance traveled (miles)
Less than high school	28
Completed high school	68
Completed college	102
Graduate or professional degree	130

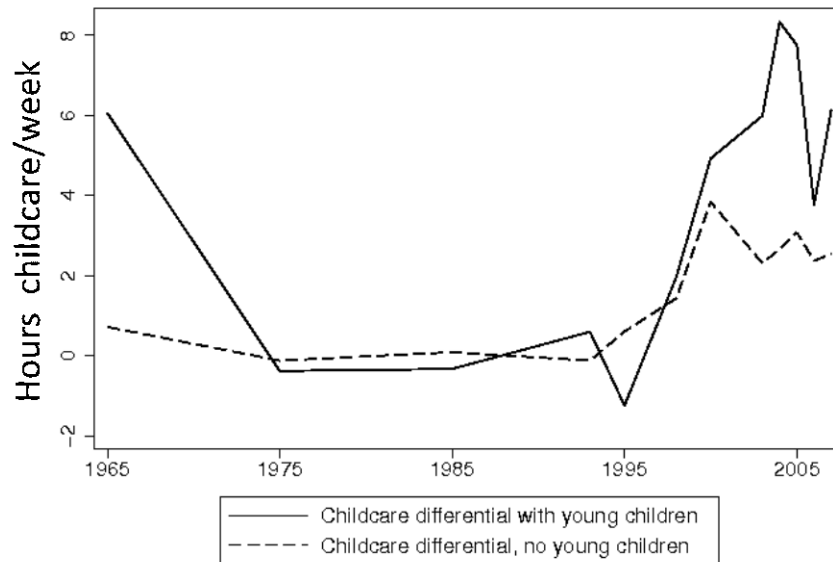
Source: Mattern and Wyatt (2009).

**Figure 1: Childcare differential, with and without travel time**



Notes: We estimate Ramey and Ramey's descriptive model for mothers, where the measure of childcare includes and excludes travel-related childcare time, using their sample. We plot the coefficients on the year\*college dummy.

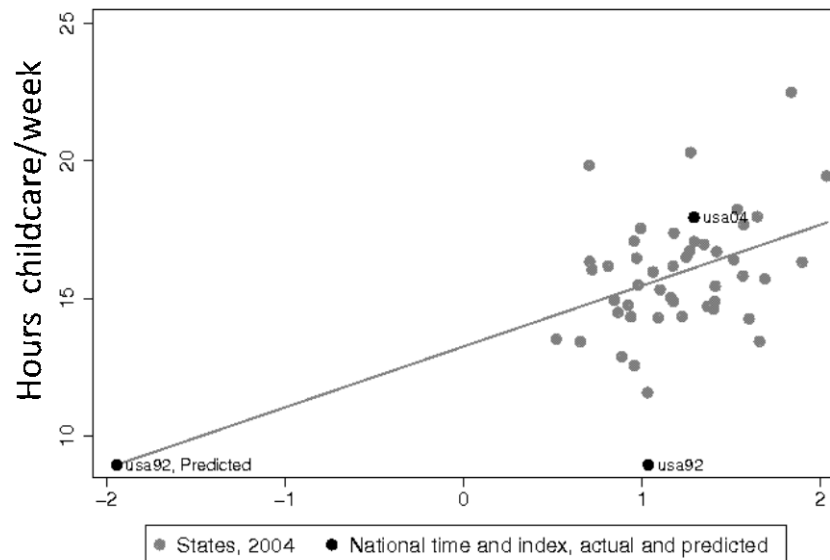
**Figure 2: Childcare differential, moms with and without young children**



Notes: We estimate Ramey and Ramey's descriptive model for mothers, separately according to whether a child younger than 5 is present in the household. We plot the coefficients on the year\*college dummy.



**Figure 3: Childcare time and college competitiveness**



Notes: The figure shows, for each state, the level of college competitiveness in 2004 (as estimated by Bound, Hershbein, and Long 2009), and the amount of time college-educated mothers spend on child care (on average for 2003-2007). We also plot these values for the country as a whole in 1992 and 2004; we extend the regression line to the level of childcare time in 1992 to obtain the implied level of college competitiveness in that year.