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## Article

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# More and more students, especially those from middle-income households, are using private tutoring

By Adrian Hille, C. Katharina Spieß and Mila Staneva

Private tutoring is playing an increasingly significant role in the education of many teenagers and children: In 2013, a total of 18 percent of students at the secondary level (approximately ages 10–17) worked with paid tutors; among students at the primary level (approximately ages 6–10), this figure stood at six percent. In the period between 2009 and 2013, an average of 47 percent of 17-year-old respondents indicated that they had received tutoring at least once in the course of their school careers—roughly 20 percentage points more than what had been reported around 15 years earlier, as the present calculations show. Although households with above-average incomes engaged the services of paid tutors the most frequently of any group, discrepancies in usage among the various socioeconomic groups have started to fade: An increasing number of students from families with below-average incomes are also working with tutors, though this share remains lower than those of other groups.

Private tutoring has been expanding into wider usage. Previous studies show that between one-quarter and one-third of students engaged the services of paid tutors at least once in the course of their school careers.<sup>1</sup> In 2007, six percent of all students at the primary level and 15 percent of all students at the secondary level received tutoring.<sup>2</sup> The most commonly tutored subject was math, followed by German and English. Tutors themselves are primarily older pupils, university students, or (former) teachers. A significant share of the suppliers is organized in commercial enterprises: one-quarter to one-third of the market comprises private tutoring schools. Overall, the tutoring industry should not be underestimated: The total annual turnover for both private and institutionally organized tutoring is estimated to be roughly 0.9 to 1.5 billion euros.<sup>3</sup>

A nationwide survey on the reasons for using private tutoring revealed that a desire for better grades is a major motivating factor for over 90 percent of parents and students.<sup>4</sup> However, students who are not facing learning difficulties at school might also use private tutoring—for example, to master successfully the transitions into secondary or higher education.

A few studies on tutoring's effectiveness suggest that tutoring is associated with an improvement in school per-

<sup>1</sup> Schneider, T. (2005): *Nachhilfe als Strategie zur Verwirklichung von Bildungszielen. Eine empirische Untersuchung mit Daten des Sozio-oekonomischen Panels (SOEP)*. In: Zeitschrift für Pädagogik, 51, 363–379; Bundesministerium für Bildung und Forschung (Pub.) (2004): *Konzeptionelle Grundlagen für einen Nationalen Bildungsbericht – Non-formale und informelle Bildung im Kindes- und Jugendalter*. Berlin.

<sup>2</sup> See Klemm, K. and Klemm, A. (2010): *Ausgaben für Nachhilfe – teurer und unfairer Ausgleich für fehlende individuelle Förderung*. Gütersloh: Bertelsmann Stiftung.

<sup>3</sup> For a summary, see Klemm, K. and Hollenbach-Biele, N. (2016): *Nachhilfeunterricht in Deutschland: Ausmaß, Wirkung, Kosten*. Gütersloh: Bertelsmann Stiftung; Klemm, K. and Klemm, A. (2010): l. c.

<sup>4</sup> See Jürgens, E. and Dieckmann, M. (2007): *Wirksamkeit und Nachhaltigkeit von Nachhilfeunterricht. Dargestellt am Beispiel des Studienkreises*. Frankfurt (Main): Peter Lang GmbH.

formance. However, due to methodological issues, this relationship cannot be unambiguously identified as a causal influence.<sup>5</sup> Evidence for the effectiveness of tutoring also comes from subjective judgements of students and their parents: when directly asked, the majority of students and parents maintains that the private out-of-school lessons have significantly improved the school grades.<sup>6</sup>

The frequently expressed assertion that the increased workload in schools has raised the demand for private tutoring<sup>7</sup> has not yet been validated.

### Socioeconomic differences in the use of private tutoring

Private tutoring is not used to the same extent by students from different socioeconomic backgrounds, which hardly comes as a surprise, given that tutoring is usually associated with costs. A previous study conducted by DIW Berlin shows that households that use tutoring, spend an average of 57 euros per month on these services. The share of households with such expenditures increases proportionately with the level of income, until it reaches the middle-income groups. If a low-income family makes use of tutoring services, however, they pay a relatively higher proportion of their income.<sup>8</sup> Another study from 2005 also shows that tutoring usage increases as household income increases. At the same time, when multiple factors are taken into account, there is no significant correlation between tutoring usage and parents' levels of education.<sup>9</sup>

While the latter findings refer to students who used tutoring services at least once in the course of their school career, a more recent study focuses solely on current tutoring usage among 15 year olds (in the subjects of math, science, and German).<sup>10</sup> It reveals, among other things, that the link between socioeconomic background and performance on standardized tests is partially correlat-

<sup>5</sup> See, for example, Haag, L. (2008): *Nachhilfeunterricht – Wem nützt er? Dem Nachhilfelehrer und/oder auch dem Nachhilfeschüler?* In: Kock, R. and Günther, H. (Pub.): *Lasst uns leben – lebt mit uns!* Pädagogik der sozial Ausgeschlossenen. Frankfurt (Main): Lang.

<sup>6</sup> Kramer, W. and Werner, D. (1998): *Familiäre Nachhilfe und bezahlter Nachhilfeunterricht, Ergebnisse einer Elternbefragung in Nordrhein-Westfalen – Beiträge zur Gesellschafts- und Bildungspolitik.* Institut der deutschen Wirtschaft. Köln: DV.

<sup>7</sup> See <http://www.sueddeutsche.de/bildung/nachhilfe-in-deutschland-schlechte-note-gutes-geschaefft-1.58935> (retrieved January 27, 2016).

<sup>8</sup> Schröder, C., Spieß, C.K. and Storck, J. (2015): Private Spending on Children's Education: Low Income Families Pay Relatively More. DIW Economic Bulletin 2015(8): 158–169.

<sup>9</sup> See Schneider, T. (2005): I. c.

<sup>10</sup> Entrich, S.R. (2014): Effects of Investments in Out-of-School Education in Germany and Japan. In: *Contemporary Japan*, 26, 71–102.

#### Box

### Data and Methods

#### Data

The present analyses are based on data from the German Socio-Economic Panel (SOEP) and the closely linked supplementary study *Familien in Deutschland* ("Families in Germany", FiD).<sup>1</sup> The SOEP, a longitudinal study that has been carried out since 1984, is a representative survey of German households. DIW Berlin began carrying out FiD in cooperation with *TNS Infratest Sozialforschung* in 2010.

Just like the SOEP, the FiD is an annual follow-up survey of German households. The data collection focuses on low-income families, families with two or more children, single parents, and families with very young children. The questions are closely aligned to those of the SOEP, and are, therefore, especially suitable for a joint analysis.

By 2013, nearly 4,500 households comprising 8,000 children were being surveyed annually for the FiD. For the SOEP,

<sup>1</sup> Socio-Economic Panel (SOEP) data from 1984-2013, Version 30, SOEP, 2015, doi:10.5684/soep.v30. Further information on these studies can be found in Wagner, G.G., Frick, J.R. and Schupp, J. (2007): "The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancements." In: *Schmollers Jahrbuch*, 127(1): 139–169, as well as in Schröder, M., Siegers, R. and Spieß C.K. (2013): "*Familien in Deutschland*" (FiD) – Enhancing Research on Families in Germany. In: *Schmollers Jahrbuch* 133 (4): 595–606.

ed with the use of tutoring: students with higher socioeconomic status perform better on such tests, which is to some degree attributed to their more frequent usage of tutoring.

Considering the well-established relationship between socioeconomic background and school performance, a potential prevalence of tutoring among socioeconomically privileged groups might lead to a further increase in persisting inequalities. Thus, an increase in tutoring usage among socioeconomically disadvantaged groups would likely lead to a decrease in educational inequalities. Against this background, the present analysis attempts to answer the following questions: Which students are more likely to make use of paid tutoring, and how have differences in usage developed over time? Have socioeconomic differences become more or less important?

30,000 people in roughly 15,000 households are currently being surveyed every year. Germany's population is representatively mapped out in the FiD and SOEP samples. Since 2014, SOEP and FiD are released as a common data set and made available for research purposes.

The SOEP and FiD samples used here comprise all young people who completed the "youth questionnaire" in the years 2000 to 2013. At the time of the interview, respondents were 17 years old. The questionnaire includes numerous questions about past educational and personal development, as well as subjective indicators and future prospects. Of central importance for the present study is a survey question in which participants specify whether they have ever enlisted the help of a paid tutor. Given the structure of this question, the data do not link the usage of tutoring with any particular ages or years.

Data from the SOEP and FiD household surveys and personal questionnaires provide detailed information on various parental characteristics as well as the living environments of the students. In the bivariate and multivariate analyses, we use—among other things—information on parental educational levels and maternal employment status, as well as household income and place of residence. This information stems from the respective years in which the respondents were 17 years old. Due to the lack of temporal reference information on when the tutoring was received, however, it is not always

clear whether the observed socioeconomic characteristics were the same at the point in time in which the tutoring took place. Thus, the impact of time-varying factors—such as school grades, for example—must be interpreted with caution. For time-constant factors—such as the parental education—this is less problematic.

In addition to data from the youth questionnaires, this study uses data from a FiD household survey for which parents indicated whether each of their 6- to 16-year old children had received any tutoring in the past six months. With these data, the usage of tutoring for 2013 according to grade level and type of school can be recorded and linked to a specific time point. The data were weighted and, therefore, the sample is representative of the total population in Germany.

#### Methodology

In the first part of the study, we compared the average tutoring usage among different socioeconomic groups. In the second part—the multivariate part—we estimated a linear probability model. This model indicates how much each of the variables contributes to tutoring usage, while taking into account all other factors. In this multivariate regression, standard errors are clustered on the mother level to account for serial correlations between different children of the same mother.

## DIW Berlin studies private tutoring usage since 2000, using a large representative sample

After presenting findings on current tutoring usage by school type and grade level, this article examines the long-term development of private tutoring usage. Here, the focus is on how the socioeconomic differences in receiving private tutoring have developed over time.<sup>11</sup>

Our research questions demand a lot from the data: first, in addition to the information on tutoring usage, detailed information on various children and family characteristics is necessary; secondly, the data should enable observation over a longer period of time; and thirdly, the data set should ideally represent all schoolchildren in

Germany. Data from the German Socio-Economic Panel (SOEP)<sup>12</sup> and the supplementary study *Familien in Deutschland* („Families in Germany," FiD) fulfill these requirements (Box). We used data from the surveys of 17-year-olds who were interviewed in the years 2000 to 2013, as well as information from parents about tutoring usage among their 6- to 16-year-old children, which is part of the 2013 FiD-study.

The SOEP and FiD data provide information only on *paid* tutoring usage. Usually, parents are the ones who pay for the tutoring service.<sup>13</sup> However, since 2011, learning assistance that takes place outside of school can also be funded by the state, through the so called "Education

<sup>11</sup> So far as our knowledge goes, there is no empirical research on the long-term development of the socioeconomic differences in tutoring usage.

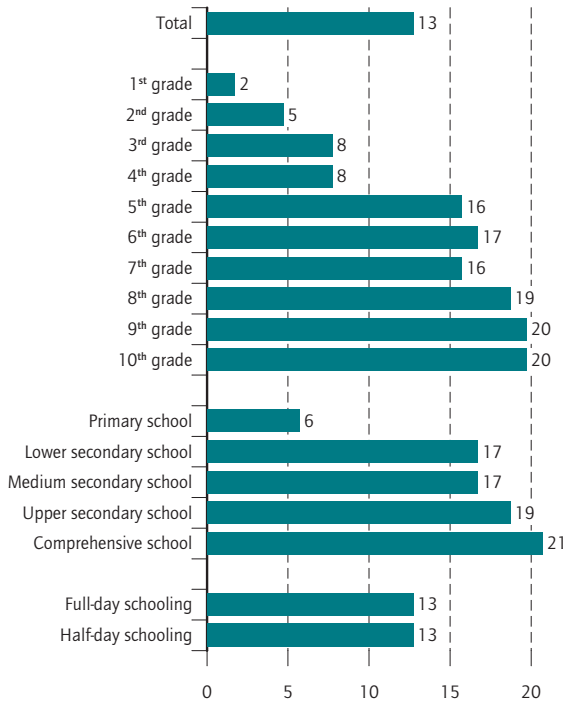
<sup>12</sup> See also the entry for „Socio-Economic Panel" (SOEP) in the DIW Glossary: [http://diw.de/de/diw\\_01.c.412809.de/presse/diw\\_glossar/sozio\\_oekonomisches\\_panel\\_soep.html](http://diw.de/de/diw_01.c.412809.de/presse/diw_glossar/sozio_oekonomisches_panel_soep.html)

<sup>13</sup> See Schroeder et al. (2015): l. c.

Figure 1

**Proportion of students using paid tutoring by class level and school type in 2013<sup>1</sup>**

6- to 16-year-olds, in percent



<sup>1</sup> Proportion of children who use paid tutoring in the six months preceding the interview.

Source: FiD v4, weighted, n = 3,904, calculations by DIW Berlin.

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The use of paid tutoring increases with grade level.

Package”. The beneficiaries are children who are in danger of repeating a grade and whose parents are receiving social benefits. However, these learning assistance benefits have only been used to a limited extent.<sup>14</sup> Furthermore, the focus on paid tutoring should not obscure the fact that students might also get free “tutoring” from older siblings, parents, relatives, and friends.<sup>15</sup>

**Tutoring usage varies by class level and school type**

Empirical findings on the more current use of tutoring services can be obtained by using the data of the 2013

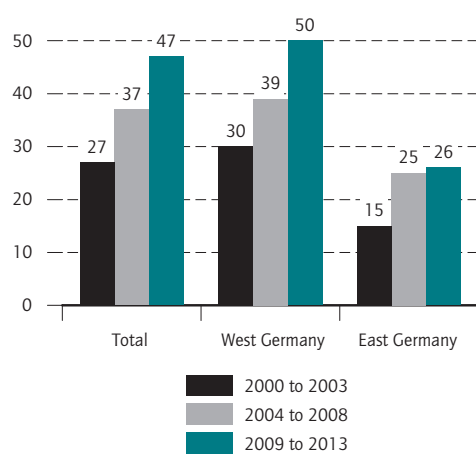
<sup>14</sup> BMAS (2015): *Evaluation der bundesweiten Inanspruchnahme und Umsetzung der Leistungen für Bildung und Teilhabe*. Zweiter Zwischenbericht. Federal Ministry of Labour and Social Affairs.

<sup>15</sup> See, for example, Klemm, K. and Hollenbach-Biele, N. (2016): l. c.

Figure 2

**Proportion of students receiving paid tutoring from 2000 to 2013<sup>1</sup>**

17-year-olds, in percent



<sup>1</sup> Proportion of adolescents who have ever enlisted the help of a paid tutor. Proportions are shown for three cohort ranges, who were interviewed in 2000–2003 (born 1982–1986), 2004–2008 (born 1987–1991) and 2009–2013 (born 1992–1996). Differences are statistically significant.

Source: SOEP v30 and FiD v4, weighted, n = 5,117, calculations by DIW Berlin.

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The use of paid tutoring has considerably increased since 2000– in East Germany relatively more than in West Germany

FiD study, for which parents provided information about tutoring usage over the past six months. The descriptive findings reveal that the proportion of students in the first to tenth grades who received paid tutoring in the last six months prior to the interview averaged around 13 percent (Figure 1).

At first sight, it becomes clear that the use of paid tutoring increases with grade level. In the sample used here, only about two percent of students in the first grade received tutoring. This proportion increases steadily with each grade year until it reaches 20 percent among the tenth graders. Differences between the grade levels at the secondary school level are not statistically significant. However, if we distinguish only between primary and secondary school students, the differences are statistically significant: in primary schools, the proportion of tutored students amounted to six percent, and is significantly lower than in other types of schools. Among the secondary schools, tutoring usage ranges from 17 percent in medium secondary schools (*Realschule*) to 21 percent in the comprehensive schools (*Gesamtschule*), but does not differ significantly in the statistical sense among the different secondary school types.

Table 1

### Socioeconomic differences in the use of paid tutoring from 2000 to 2013<sup>1</sup>

17-year-olds, in percent

	2000 to 2003	2004 to 2008	2009 to 2013		2000 to 2003	2004 to 2008	2009 to 2013
<b>Total</b>	27	37	47	Household type			
<b>Socioeconomic characteristics</b>				both parents present	27	37	48
Mother's education				single mother	26	35	47
no professional education	21	32	41	single father	23	29	41
vocational training	29	38	49	Children under 17 in household (number)			
university education	26	38	49	0	27	34	49
Mother's employment status				1	29	42	47
full-time	23	37	49	2	22	35	44
part-time	31	38	50	3+	28	22	32
marginal employment	32	46	48	Gender			
registered unemployed	24	25	25	male	28	36	47
non-working	24	31	45	female	26	37	47
Father's education				Region			
no professional education	24	27	51	West Germany	30	39	50
vocational training	28	37	48	East Germany	15	25	26
university education	27	43	44	Town size			
Monthly adjusted household income (net, in Euros)				less than 20,000 inhabitants	27	36	43
lower quartile	21	26	37	20,000 to 100,000 inhabitants	27	38	54
second quartile	22	34	42	more than 100,000 inhabitants	28	36	47
third quartile	26	46	59	<b>School achievement</b>			
upper quartile	39	41	51	German (school grade)			
Basic income for job-seekers				1	10	17	26
yes	12	24	31	2	21	26	40
no	28	38	49	3	28	39	49
Parents' migration background				4	34	42	58
no	29	37	48	Mathematics (school grade)			
one parent	28	46	45	1	14	14	31
both parents	19	31	48	2	22	28	38
				3	25	35	46
				4	36	48	60
				<b>Number of observations</b>	1 475	1 537	2 105

1 Proportion of adolescents who have ever enlisted the help of a paid tutor. Proportions are shown for three cohort ranges, who were interviewed in 2000–2003 (born 1982–1986), 2004–2008 (born 1987–1991) and 2009–2013 (born 1992–1996). Income quartiles are based on the distribution of monthly net household income, adjusted to an equivalence scale (weighted by the number and age of household members), which are subdivided into four groups. The lowest quartile includes the first 25 percent of the distribution, which have a weighted household income of 833 Euros or less. The second quartile comprises households with incomes between 834 and 1,111 Euros. The lower and upper bound of the third household income quartile are at 1,112 and 1,435 Euros, respectively. Households in the upper quartile have a weighted income of 1,436 Euros per month or higher.

Source: SOEP v30 and FiD v4, weighted, n = 5,117 (n = 5,010 for basic income for job-seekers), calculations by DIW Berlin.

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Some socioeconomic characteristics are less relevant for the use of private tutoring than they were in the past.

Contrary to expectations, there are no significant differences in the use of tutoring between pupils of all-day schools<sup>16</sup> and those of half-day schools. One might expect that all-day students, due to extra afternoons of activities at school—which may include professional assistance in school subject matter—make use of paid tutoring to a lesser extent. However, this is not the case.

### Adolescents increasingly report making use of paid tutoring

To investigate how the extent of paid tutoring usage has changed over time, we consider the average usage of tutoring among 17-year-olds over a period of 14 years. We group the respondents in three birth cohorts: students who turned 17, in the years 2000 to 2003, 2004 to 2008, and 2009 to 2013, respectively. These students indicated whether they had ever enlisted the help of paid tutors (see Figure 2). In the 2009–2013 cohorts, the aver-

<sup>16</sup> See also the entry for „Ganztagsschule“ in the DIW Glossary: [http://diw.de/de/diw\\_01.c.424836.de/presse/diw\\_glossar/ganztagsschule.html](http://diw.de/de/diw_01.c.424836.de/presse/diw_glossar/ganztagsschule.html)

age was 47 percent—a proportion that was 20 percentage points higher than that of the 2000–2003 cohorts.

Also noteworthy are the differences between West and East Germany: In West Germany, on average, half of all students in the 2009–2013 cohorts received tutoring at least once; in the East, this figure amounted to only one quarter. Differences between East and West are also observable when investigating changes in tutoring usage over time: while the proportion of West German students to have ever received tutoring grew—from an already high level—by 20 percentage points between 2000 and 2013, the corresponding proportion among East German students increased from a significantly lower level by eleven percentage points. East-West differences in tutoring usage have been observed in previous studies as well, and are attributed to the historically weak tradition of private tutoring in East Germany.<sup>17</sup> In relative terms, however, the proportion of East German students who were tutored at least once increased somewhat more strongly (73-percent increase) than did that of West German students (66-percent increase).

### Tutoring usage varies greatly according to income and school performance

The present analyses confirm the findings of earlier studies, which linked participation in extracurricular tutoring first and foremost with school performance and parental income. In the following, we examine the differences among the most recent cohorts (2009–2013) (Table 1, Column 3).

Among students from families with the highest incomes (top quartile), roughly half (51 percent) had made use of tutoring at least once. In the lowest income quartile, this figure amounted to 37 percent. However, in the second-highest quartile, the proportion of students who had been tutored actually amounted to 59 percent.

The role of income disparities in tutoring usage also becomes clear when one considers differences with respect to eligibility for social benefits: just under a third of students from families receiving basic income for job-seekers—known as Hartz IV—were tutored at least once. In families who are not receiving these benefits, the average was 49 percent. The values were similar if we differentiate between groups below and above the poverty line. Also noteworthy is that students from households with at least three children under the age of 17 used tutoring significantly less—such families have probably fewer financial resources and, thus, cannot afford tutoring for their children.

<sup>17</sup> See Schneider (2005): I. c.

Among the students in the more recent cohorts, 58 percent of those who received a “satisfactory” grade in German class received tutoring at least once, while only 26 percent of students who received a grade of “very good” did so. For math class, the figures stood at 60 percent and 30 percent, respectively.<sup>18</sup>

There are also factors that have no bearing on whether a student receives tutoring. For example, there are no differences between boys and girls: 47 percent of each sex had received tutoring at least once. Contrary to expectations, the education levels of the parents, as well as the mother’s employment status, also played no major role. It is worth noting, however, that children whose fathers were university graduates exhibited slightly lower usage rates. Similarly, children whose mothers had no vocational training or university education also received tutoring to a lesser extent.

### Socioeconomic differences have partially decreased in the last 14 years

In order to study how the impact of socioeconomic factors on the decision to engage in tutoring has changed over time, corresponding distributions in each of the three cohort groups are first compared (Table 1, columns 1 to 3).

These findings indicate that in the oldest cohorts, the role of socioeconomic differences was more pronounced than it was in the recent ones: in contrast to the 2009–2013 cohorts, the 2000–2003 cohorts’ tutoring usage differed not only in terms of school grades and income, but also considerably with respect to migration background. Thus, with respect to these factors, differences in the use of tutoring have, declined over the past years.

For example, among the 2000–2003 cohorts, only 19 percent of children from families where both parents have a migration background received tutoring at least once, compared to 29 percent of children whose parents have no migration background. This difference has declined: in the most recently observed cohorts, 45 percent of students received tutoring, regardless of their parents’ migration background.

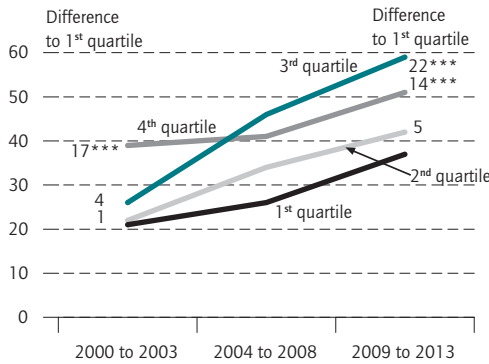
The decreasing socioeconomic differences are especially clear in the case of the factor “household income”. Students from middle-income households are enlisting tutors significantly more often than they were before: in the third income quartile, the proportion of those who received tutoring nearly doubled between the oldest and

<sup>18</sup> Due to the lack of time-related reference information on when the tutoring was received, it is not always clear whether the factors used in this study—such as school grades, in this instance—apply to the period after tutoring or before. Thus, it is theoretically possible that the grade was influenced by prior tutoring.

Figure 3

**Use of private tutoring by income quartile from 2000 to 2013<sup>1</sup>**

17-year-olds, in percent



<sup>1</sup> Proportion of adolescents who have ever enlisted the help of a paid tutor. Proportions are shown for three cohort ranges, who were interviewed in 2000–2003 (born 1982–1986), 2004–2008 (born 1987–1991) and 2009–2013 (born 1992–1996). For the first and third cohort, the proportions of teens receiving private tutoring in the second, third and fourth income quartile are compared to that of the lowest quartile. Differences are shown in percentage points. \*\*\* Significant (1 %-level), \*\* Significant (5 %-level), \* Significant (10 %-level)

Income quartiles are based on the distribution of monthly net household income, adjusted to an equivalence scale (weighted by the number and age of household members), which are subdivided into four groups. The lowest quartile includes the first 25 percent of the distribution, which have a weighted household income of 833 Euros or less. The second quartile comprises households with incomes between 834 and 1,111 Euros. The lower and upper bound of the third household income quartile are at 1,112 and 1,435 Euros, respectively. Households in the upper quartile have a weighted income of 1,436 Euros per month or higher.

Source: SOEP v30 and FiD v4, weighted, n = 5,119, calculations by DIW Berlin.

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Adolescents from households in the third income quartile use paid tutoring most frequently.

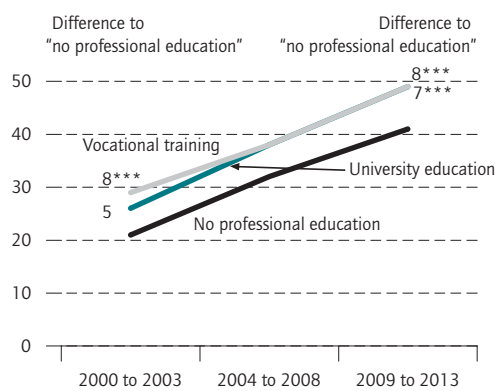
most recent cohorts (from 26 to 59 percent, Figure 3). In the most recent cohort, the usage rate among students from the third income quartile actually exceeded that of the top quartile, which had a significant lead in the 2000–2003 cohorts. For students from the lowest-income households, however, the usage rate only increased from 21 to 37 percent. In contrast, tutoring usage among students whose families are recipients of basic income for job-seekers (*Arbeitslosengeld II*) actually increased by 158 percent (from 12 percent in the oldest cohort to 31 in the most recent cohort), compared with an increase of only 75 percent (from 28 percent to 49 percent) among students whose families do not receive *Arbeitslosengeld II*.

Declining differences over time can also be observed with respect to the employment status of the mother. Here, the usage rates among students whose mothers were full-time employed or not working (but not regis-

Figure 4

**Use of private tutoring by the mother's professional education from 2000 to 2013<sup>1</sup>**

17-year-olds, in percent



<sup>1</sup> Proportion of adolescents who have ever enlisted the help of a paid tutor. Proportions are shown for three cohort ranges, who were interviewed in 2000–2003 (born 1982–1986), 2004–2008 (born 1987–1991) and 2009–2013 (born 1992–1996). For the first and third cohort, the proportions of teens receiving private tutoring with mothers who have a vocational training or university education are compared to that of teens whose mothers do not have these degrees. Differences are shown in percentage points. \*\*\* Significant (1 %-level), \*\* Significant (5 %-level), \* Significant (10 %-level)

Source: SOEP v30 and FiD v4, weighted, n = 5,119, calculations by DIW Berlin.

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The influence of parental education on the use of private tutoring has remained constant over time.

tered as „unemployed“) have shown a particularly strong increase over time.

However, a convergence over time cannot be discerned for every factor. Although all groups increasingly began using private tutoring, the differences in usage with regard to the educational level of the mother have not changed much over time. Within the oldest cohort, 29 percent of the students whose mothers had completed vocational training received tutoring, compared to 21 percent of those whose mothers had no vocational education at all (see Figure 4). In both groups, usage increased over the observation period by 20 percentage points. However, the relative usage increase (95 percent) among students whose mothers were less educated was greater than that of the other students (69 percent).

The preceding analyses refer to single correlations between the use of tutoring services and various factors. They show, for example, that differences in income affect demand for tutoring—however, it could also be that these differences in income can be attributed to educational differences, and that these very educational dif-



Table 2

**Determinants in the use of private tutoring from 2000 to 2013<sup>1</sup>**

Marginal effects of a linear probability model, in percentage points

	Marginal effects	p-value
<b>Socioeconomic characteristics</b>		
Mother's education (reference: no professional education)		
Mother has vocational training	9.1**	3
Mother has university education	6.4	27
Mother has vocational training X cohort 2	-3.9	54
Mother has university education X cohort 2	1.4	87
Mother has vocational training X cohort 3	-4.8	46
Mother has university education X cohort 3	1.5	86
Mother's employment status (reference: full-time)		
Mother works part-time	2	43
Mother has marginal employment	4.6	20
Mother is registered unemployed	-2.7	54
Mother is non-working	0	100
Father's education (reference: no professional education)		
Father has vocational training	0.4	92
Father has university education	-0.9	85
Household income (reference: 1st quartile)		
2 <sup>nd</sup> income quartile	-1.1	80
3 <sup>rd</sup> income quartile	1.5	73
4 <sup>th</sup> income quartile	14.7***	0
2 <sup>nd</sup> income quartile X cohort 2	8.5	21
3 <sup>rd</sup> income quartile X cohort 2	15.8**	2
4 <sup>th</sup> income quartile X cohort 2	-0.6	93
2 <sup>nd</sup> income quartile X cohort 3	5.1	41
3 <sup>rd</sup> income quartile X cohort 3	19	0
4 <sup>th</sup> income quartile X cohort 3	1.5	83
At least 1 parent with migration background	-2.8	26
Number of younger siblings in household (reference: none)		
One younger sibling	3.6*	10
Two or more younger siblings	-0.7	81
East Germany	-12.8***	0
Town size	0.8	74
Boy	-1.4	47
<b>School-related characteristics</b>		
Recommendation for upper secondary school	-2.2	31
Latest German grade	4.7**	3
German grade X cohort 2	0.2	96
German grade X cohort 3	2.6	39
Latest mathematics grade	5.7***	0
Mathematics grade X cohort 2	3.6	17
Mathematics grade X cohort 3	2.8	28
<b>Cohort differences</b>		
Cohort (reference: cohort 2000 to 2003)		
Cohort 2004 to 2008	-6.7	59
Cohort 2009 to 2013	0	100
Constant	-10.7	25

<sup>1</sup> Regression model explaining the use of private tutoring. The following variables were also held constant, but are not shown in the table: mother does not live in household (and interaction of this variable with cohorts), father does not live in household. Standard errors were clustered at the household level. \*\*\* Significant (1%-level), \*\* Significant (5%-level), \* Significant (10%-level)

Source: SOEP v30 and FiD v4, weighted, n=5,117, calculations by DIW Berlin.

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The regression results show that the increasing use of private tutoring cannot simply be explained by time trends, but most importantly reflects the rising demand by middle-income households.

ferences are actually what is affecting the tutoring usage. In order to consider potential relationships among individual factors—such as between education and income—multivariate analyses are carried out in the following part of the study.

**Multivariate analyses largely confirm previous results**

The multivariate analysis confirms the correlation between tutoring usage and household income (Table 2). The previously described “catching up” among middle-income groups is observed: within the oldest cohort, students from the highest income group received by 15 percentage point more tutoring compared with the reference group—students from the lowest income group. This difference between the first and fourth quartiles of the income distribution remained constant over the observation period. Compared with the lowest quartile, however, the third quartile saw an increase in tutoring usage of 19 percentage points.<sup>19</sup> Thus, students in the third quartile actually showed a higher likelihood of using paid tutoring than did students in the highest quartile.

The multivariate analysis further confirms that among the oldest cohort, students whose mothers had completed vocational training indicated a higher usage of tutoring—the reduction in this difference over time was small, and not statistically significant. It is worth noting, however, that the education of the father plays no role in tutoring usage. Furthermore, the multivariate results indicate that most other factors—in particular, the employment status of the mother or whether the student had received a recommendation for a *Gymnasium*—are not significantly associated with the use of tutoring. It is also evident that the proportion of students receiving tutoring in East Germany was 13 percentage points lower than that of students in West Germany.

Even when numerous socioeconomic factors are taken into account, a decrease in the performance in mathematics by a drop of one grade is associated with an increase in tutoring by approximately six percentage points. Over the course of the observation period, the impact of the math scores increases slightly, but not significantly. Similarly, a one-grade drop in the performance in German is linked to a five percentage points higher likeli-

<sup>19</sup> These are the coefficients of the interaction terms “income quartile X cohort”. They indicate how the tutoring usage of the corresponding income quartile has developed in cohorts 2 and 3 in comparison to the reference category (the lowest income quartile) and the reference time (2000–2003 cohorts). The difference between the 3rd and 1st quartiles was 1.5 percentage points in the oldest cohorts (2000–2003), and 1.5+19 percentage points—that is, 20.5 percentage points—in the most recent cohorts (2009–2013). The 19-percentage-point increase in the difference is statistically significant.

hood of receiving tutoring: an association that did not change significantly over the observation period.

The differences among cohorts presented at the bottom of the table are not statistically significant: this means that the increase in tutoring usage over time can be entirely explained by the other factors—such as, for example, a higher usage among students from middle-income households—and not through general time trends.

## Conclusion

A significant proportion of schoolchildren—18 percent at the secondary and 6 percent at the primary level—enlist the help of private tutors. Tutoring can, thus, be viewed as an important complement to compulsory schooling as well as to extracurricular activities such as music and sports. Already existing educational inequalities may increase if it is primarily the students from socioeconomically advantaged backgrounds who make use of these private educational services. Against this background, the important questions are whether differences in the usage of tutoring can actually be observed, and how these differences have evolved in recent years.

The empirical findings indicate that more and more students are receiving tutoring, indeed. Our longitudinal study shows that the proportion of 17-year-olds who have ever been tutored increased by nearly 75 percent between 2000 and 2013. The analysis also largely confirms the findings of previous studies indicating that the share of students receiving tutoring varies with household income. However, the impact of income has decreased over time: the present analysis shows that it is increasingly and primarily children from middle-income households—that is, middle-class students—who are receiving tutoring.

The fading effects of household income are remarkable, because socioeconomic differences regarding oth-

er educational services have, in the contrary, increased over time. This applies to the attendance of day care for children below the age of three;<sup>20</sup> engagement in educational leisure activities;<sup>21</sup> and the attendance of private schools.<sup>22</sup> However, with respect to all-day schooling socioeconomic differences in use are also rather decreasing than increasing, as previous studies by DIW Berlin have shown.<sup>23</sup>

Overall, the reasons for the increased use of private tutoring remain unclear. One explanation could be that families increasingly view the courses offered by compulsory schools as insufficient. But it may also be that the increase in tutoring usage reflects a growing competitiveness and “market orientation” among students and their parents. However, another explanation that cannot be ruled out with the present analysis is that students were using tutoring to the same extent in the past, but were not paying for such services. The question of the quality of tutoring services was also not addressed in this study.

Regardless of these shortcomings, it is worth noting that although differences between income groups have decreased over time, students from lower-income groups are still less likely to receive tutoring. All things being equal, this might contribute to existing educational inequalities.

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