



Does parental absence reduce cognitive achievements? Evidence from rural China[☆]



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ABSTRACT

Many children worldwide are left-behind by parents migrating for work — over 61 million in rural China alone, almost half of whom are left-behind by both parents. While previous literature considers impacts of one parent absent on educational inputs (e.g., study time, enrollment, schooling attainment), this study directly investigates impacts on children's learning (test scores) and distinguishes impacts of absence of one versus both parents. Dynamic panel methods that control for both unobserved individual heterogeneity and endogeneity in parental absence are used with data collected from rural China. The estimates indicate significant negative impacts of being left-behind by both parents on children's cognitive development, reducing their contemporary achievements by 5.4 percentile points for math and 5.1 percentile points for Chinese, but much smaller insignificant impacts of being left-behind by one parent. Cross-sectional evidence indicates that only absence of both parents is associated with substantially lower family inputs in after-school tutoring.

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1. Introduction

One in three children under age 17 in rural China is living without one or both parents who have migrated in search of work in cities. Almost half of these children have been left-behind by both parents.¹ Despite its degree and scale, the “left-behind children” phenomenon in China remains understudied because of both theoretical ambiguities and empirical challenges. The existing literature has long highlighted the various channels through which parental migration can affect the human capital development of children left-behind (e.g., [Dustmann and Glitz, 2011](#); [Haveman and Wolfe, 1995](#); [Stark, 1993](#)). On the one hand, parents increase their earnings through migration and remittances of these earnings can ease the household budget

constraint and thereby increase household spending on education and reduce child labor.² This theoretical prediction has been empirically supported by studies on the effect of remittances from migrants on children left-behind in El Salvador, Guatemala, Mexico, the Philippines, and some Pacific countries (Tonga and Vanuatu).³ On the other hand, parental migration inherently leads to parental absence from home, which can have negative effects on children left-behind through channels such as the loss of local earnings and labor, the lack of parenting inputs, and the psychological costs associated with family separation.⁴ Moreover, parental migration also increases the migration prospects of children and can induce more or less educational investment in children depending on the difference in the rates of return to human capital between the migration destination and the place of origin ([Beine et al., 2008](#)). Therefore, the sign of the overall effect of parental migration on the education of children left-behind is a priori unclear and remains an empirical question.

Recently, there is a growing empirical literature that examines the effects of parental migration on the outcomes of children left-behind, focusing mainly on dimensions of time allocation and schooling attainment.

² For a survey of the remittances literature, see [Rapoport et al. \(2006\)](#) and [Yang \(2011\)](#).

³ See, for example, [Edwards and Ureta \(2003\)](#), [Yang \(2008\)](#), [Adams and Cuecuecha \(2010\)](#), [Alcaraz et al. \(2012\)](#), [Clemens and Tiongson \(2012\)](#), and [Gibson and McKenzie \(2014\)](#).

⁴ See [Antman \(2013\)](#) for a survey of the literature on the adverse effects of parental absence.

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¹ See Section 2.1 for the source of these figures.

Antman (2011), for example, finds that Mexican fathers' migration to the U.S. decreases study hours and increases work hours for children left-behind. Chang et al. (2011) and Chen (2013) both employ the China Health and Nutrition Survey (CHNS) to examine the time allocation of left-behind children in China, and find that children of migrant households spend more time in household work.⁵ In contrast to the consistent results on children's time allocation, findings on children's schooling attainment are mixed, even among studies of the same context. For example, in studying the impact of Mexican emigration to the U.S. on children's schooling attainment, McKenzie and Rapoport (2011) find a negative effect of living in a migrant household on schooling of older children left-behind, while Antman (2012) reports a positive effect of paternal migration on the schooling attainment for girls.⁶ In a study of the impact of New Zealand's Recognized Seasonal Employer (RSE) program on Pacific countries, Gibson and McKenzie (2014) find that the seasonal migration of some household member(s) has a large positive impact on school attendance for 15–18 year olds in Tonga, but no impact for children at any schooling stage in Vanuatu.^{7,8}

This paper examines the immediate net impacts of parental migration on the cognitive achievements of their children left-behind in rural China. It makes two important contributions to the existing literature. First, we are able to distinguish between absences of one versus both parents and estimate their effects separately because of the large numbers of children in both categories. Clearly, the learning implications for children of a family structure with one parent at home can be drastically different from that with neither parent at home. The phenomenon of “left-behind children” elsewhere almost entirely refers to cases in which only one parent (usually the father) is absent from home; in contrast, in rural China, often both parents migrate simultaneously. If paternal and maternal inputs are closer substitutes in the production of child human capital than those of other caregivers, such as grandparents, the absence of both parents has larger impacts on child human capital and may deserve greater policy attention than the commonly considered cases of the absence of one parent. Nonetheless, research on the impacts of migration of both parents on children left-behind is very rare. As for the two previous studies on left-behind children in China, Chen (2013) limits her analysis to households with fathers away from home only, and Chang et al. (2011) restrict the effects to be linear in the number of parents away.

Second, we are among the first to examine the impacts of parental absence on children's learning outcomes measured by test scores. Most previous research is limited to inputs into education such as study time, school enrollment, and schooling attainment. This distinction is important because parental absence may have very different impacts on the time students devote to education than on what they learn if parents provide inputs that are complements to students' own efforts. Therefore, it is possible that parental absence generates positive impacts on the time

children spend on education but still negative impacts on their learning outcomes. To the best of our knowledge, the only published paper that examines the effect of parental absence on children's academic achievement is in the context of military deployments (Lyle, 2006), which finds a tenth of a standard deviation decline in the test scores of enlisted soldiers' children.

The data used in this paper were collected by the authors from Longhui County in Hunan Province of China. The county was selected for this study to represent the country's poorest rural areas with a high prevalence of parental absence: per capita GDP is less than a quarter of the national average and over two-thirds of children are left-behind by at least one parent. Working with the county's educational bureau, we randomly selected over 5000 third to fifth graders (9 to 11 year olds) enrolled in the county's primary schools, and collected longitudinal information on their parental absence status and test scores in math and Chinese for every school term since their enrollment in the first term of grade 1. The identification strategy used in this paper follows the same spirit as Andrabi et al. (2011), who apply dynamic panel methods to evaluate the effect of private schooling on student achievement in Pakistan. To address the possibility that the contemporary parental migration status and child outcomes are shaped by common past factors such as genetics and experience, we adopt a value-added specification of human capital accumulation to control for the impacts of all historical schooling inputs and heritable endowments on current child outcomes. We further include child fixed effects in the value-added model to control for unobserved individual heterogeneity in learning. That is, for children whose parents' migration status changes over time, we identify the effect of parental absence by comparing a child's *achievement progress* in periods with parental absence to his/her *achievement progress* in periods without parental absence. Finally, even after controlling for lagged achievement and individual heterogeneity in achievement progress, changes in parental absence status may still be correlated with changes in the time-varying component of the unobserved determinants of learning. To further address this concern, we employ a GMM framework and instrument changes in parental absence with its longer lags, and explore the robustness of our results to a range of persistence parameters.

Our estimates show significant adverse effects of the absence of both parents on the cognitive achievements of children left-behind, reducing their contemporary test scores by 5.4 and 5.1 percentile points in math and Chinese, respectively. However, we find that the effects of the absence of a single parent, though still negative, are much smaller and insignificant, suggesting that there may be a high degree of substitution between fathers and mothers in educating children. That is, when only one parent is away, the remaining parent may assume the roles of both in terms of educating their children, resulting in little reduction in family inputs on children's education. This hypothesis is also consistent with the cross-sectional evidence that only the absence of both parents is associated with substantially lower family inputs in after-school tutoring. As previous research suggests a key role of the persistence parameter in estimating the value-added achievement function, in addition to estimating the persistence parameter empirically, we also allow it to be exogenously assigned, varying from 1.0 to 0.4 with decrements of 0.2. Our conclusion that only the absence of both parents has significant adverse effects on children's cognitive achievement is robust to this variation in the persistence parameter value. Furthermore, we also conduct sensitivity/robustness analysis using alternative classifications of parental absence status, sample selection rules, and achievement measures, and obtain similar results in all these exercises. Our results suggest that the absence of both parents, which is quite common in rural China, is a much more serious problem in shaping the educational outcomes of the next generation than the usually considered cases elsewhere of the absence of a single parent, and therefore deserves greater policy attention.

The remainder of this paper is organized as follows. Section 2 provides the background of the “left-behind children” phenomenon, describes our sample, and provides the “first-look” evidence of the relationship between parental absence status and children's cognitive achievement

⁵ Chen (2013) also finds that mothers spend less time in both household and income-generating activities after fathers' migration, and interprets the findings as mothers' non-cooperative behaviors as a result of fathers' imperfect monitoring after migration.

⁶ McKenzie and Rapoport (2011) match the observed decrease in schooling to increased housework for girls and migration for boys, and link the latter to the increased migration prospects of boys and lower returns to schooling in the U.S. for Mexican migrants. Antman (2012) interprets the differential effects of paternal migration by gender as the results of increased bargaining power for mothers who spend the marginal dollars on the education of girls.

⁷ Gibson and McKenzie (2014) attribute the divergent impacts between Tonga and Vanuatu to their differences in both the nature of selection into migration and schooling fee policies. The RSE households are relatively better off in Vanuatu. In addition, many schools in Vanuatu also allow students to remain enrolled even with unpaid fees from previous years.

⁸ There are also studies on the effects of the migration of family members other than parents on children's education. For example, Kuhn (2007) shows that the migration of brothers was associated with improvements in children's pace of school completion in Bangladesh, while the migration of sisters was not. Gibson et al. (2011) use a migration lottery program to study the effects of the permanent emigration of some household member(s) from Tonga to New Zealand on the remaining household members and find insignificant impact of the migration of some household members, typically uncles and aunts, on children's school enrollment and schooling attainment.

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