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A Look at Returning Teachers

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Abstract: Research shows that one-quarter to one-third of teachers who leave the profession return, the majority after only a short absence. Though returning teachers can constitute a substantial share of newly hired teachers in schools each year, little is known about them, the factors associated with their decisions to return, or the schools to which they return. In this study, I use a 20-year longitudinal dataset to examine the characteristics of returning teachers as well as the personal, school, and district factors associated with their return both to the profession and to particular schools. In addition, I consider the extent to which returning teachers contribute to the systematic sorting of teachers across schools. Contrary to conventional wisdom, the loss of teachers to attrition from the profession is more likely to be permanent for smaller schools and districts outside of urban and suburban areas. In addition, both personal and job-related factors impact whether and where former teachers return, albeit differently by gender. Interestingly, personal and pecuniary factors in teaching appear to play a greater role than non-pecuniary factors on male leavers' decisions regarding whether and where to return, whereas personal, pecuniary, and non-pecuniary factors all influence female leavers' decisions. Finally, the study demonstrates that returning teachers on average reenter schools that are very similar in terms of student and teacher characteristics to those that they left.

Keywords: returning teachers; teacher sorting; teacher supply

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Reflexiones sobre los docentes que regresan.

Resumen: Las investigaciones muestran que entre una cuarta parte a un tercio de los docentes que dejan la profesión retornan, la mayoría después de una corta ausencia. Aunque los docentes que regresan pueden constituir una parte importante de los nuevos ingresos en las escuelas cada año, se sabe poco acerca de ellos, los factores asociados a sus decisiones de retorno, así como de las escuelas a las que regresan. En este estudio, utilizo una base de datos longitudinales de 20 años para examinar las características de los personales, y factores asociados a los distritos escolares, y la decisión de volver a trabajar en escuelas privadas. Además, considero en que medida los docentes que regresan contribuyen a generar sistemas de ordenamiento del personal docente en las escuelas. Contrario a las perspectivas más convencionales, la deserción profesional es más probable que sea permanente en las escuelas de menor tamaño y distritos alejados de las zonas urbanas y suburbanas. Además, factores personales y relacionadas con el trabajo impactan donde y como retornan los antiguos profesores, aunque de forma diferente según el género. Curiosamente, los factores personales y monetarios parecen jugar un papel más importante que los no-monetarios relativos a decisiones sobre si y dónde regresar para los hombres, mientras que los factores personales, monetarios, y no-monetarios influenciaron las decisiones de todas las mujeres. Por último, el estudio demuestra que la los docentes que retornan a la profesión, en promedio lo hacen a escuelas que son muy similares en términos de estudiantes y características de los maestros a las que dejaron.

Palabras clave: retorno profesional; clasificación docentes; suministro docente.

Reflexões sobre os professores que retornam.

Resumo: A pesquisa mostra que entre um quarto a um terço dos professores que deixam a profissão voltar, a maioria depois de uma curta ausência. Ainda que os professores que retornam podem ser uma parte importante dos professores que ingressam nas escolas a cada ano, pouco se sabe sobre eles, os fatores associados à sua decisão de voltar, assim como as escolas para que eles retornam. Neste estudo, foi utilizado um banco de dados longitudinal de 20 anos para examinar as características pessoais e fatores associados a os distritos escolares e a decisão de voltar para a profissão em escolas particulares. Além disso, considere a medida em que os professores que retornam ajudariam a gerar sistemas de ordenamento dos professores nas escolas. Ao contrário de perspectivas mais convencionais, a deserção profissional é mais provável que seja permanente em escolas menores e distritos distantes das áreas urbanas e suburbanas. Além disso, fatores pessoais e relacionados ao trabalho impactam, quando e como retornar embora de maneira diferente de acordo com o gênero. Curiosamente, os fatores pessoais e monetários parecem desempenhar um papel mais importante do que fatores não-monetários para os homens, enquanto as decisões pessoais, monetária e não-monetárias influenciaram as mulheres. Finalmente, o estudo mostra que os professores que retornam à profissão, em média, vão a escolas que são muito semelhantes em termos de estudante e características dos professores das que eles trabalhavam antigamente.

Palavras-chave: docentes retorno; classificação profissionais; abastecimento de docentes.

Introduction

Considerable attention has been paid in recent years to the issue of teacher attrition and to the factors that influence teachers' decisions to move from one school to another or to leave the profession altogether. We know from this research that the personal characteristics and qualifications of teachers, as well as characteristics associated with the schools and districts in which they teach, significantly impact those decisions (for comprehensive reviews, see Borman & Dowling, 2008; Guarino, Santibanez, & Daley, 2006). Studies from the U.S. and elsewhere also indicate that many who leave teaching before retirement age do so for reasons other than dissatisfaction with the profession. In fact, family commitments/personal reasons have been cited in a number of studies as the most common motivation for leaving, especially by female teachers (Boe, Bobbitt, Cook, Barkanic, & Maislin, 1998; Greene & Lahti, 1984; Henke, Choy, Chen, Geis, & Alt, 1997; Ingersoll, 2001, 2002; Ingersoll & Smith, 2003; Kirby, Grissmer, & Hudson, 1991; Oregon State Board of Education, 1992; Robinson, Munn, & MacDonald, 1992; Scafidi, Stinebrickner & Sjoquist, 2005; Stinebrickner, 2001, 2002). Stinebrickner's (2001, 2002) findings confirm that many individuals who left teaching in the U.S. during the 1970s and early 1980s left the workforce altogether, with females more likely to have stopped working than males.

It seems hardly surprising then that a significant percentage – roughly one-quarter to one-third based on available evidence – of those who leave teaching early in their careers eventually return (Beaudin, 1993; DeAngelis & Presley, 2011; Grissmer & Kirby, 1992; Kirby et al., 1991; Murnane, Singer, & Willett, 1988; Singer, 1993; Stinebrickner, 2002). Returning teachers (also referred to as reentrants) can constitute a substantial share of newly hired teachers in schools each year. At the national level, about 25% to 40% of new hires during the 1980s and 1990s were experienced former teachers (Broughman & Rollefson, 2000; Cook & Boe, 2007; Hussar, 1999). In some states, such as Connecticut and Illinois, reentrants constituted up to half of annual new hires during that same time period (Beaudin, Thompson, & Prowda, 2000; Illinois State Board of Education, 2008). Returning teachers differ from new entrants to the profession in that they bring to their new schools and positions one or more years of prior teaching experience, which is one of the few measurable attributes of teachers that has been consistently linked to teacher effectiveness (see, e.g., Boyd, Lankford, Loeb, Rockoff, & Wyckoff, 2008; Clotfelter, Ladd, & Vigdor, 2006, 2007; Hanushek, Kain, O'Brien, & Rivkin, 2005; Kane, Rockoff, & Staiger, 2008; Rice, 2003; Wayne & Youngs, 2003).

Despite their potentially important contributions to teacher supply and to individual schools, little is known about returning teachers, the factors associated with their decisions to return, or the schools to which they return. The few studies that have been conducted on this topic are based on teacher cohorts dating back to the 1970s and early 1980s (Beaudin, 1993, 1995; Heyns, 1988; Murnane et al., 1988; Murnane, Singer, Willett, Kemple, & Olsen, 1991; Singer, 1993). Those studies with one exception concentrated on the influence of former teachers' personal characteristics on their decisions to return. In this study, I use more recent data to examine the characteristics of returning teachers as well as the personal, school, and district factors associated with their return both to the profession and to particular schools. Given recent evidence and policy concern regarding inequities in the distribution of teachers across schools (Betts, Rueben, & Danenberg, 2000; Clotfelter et al., 2006; DeAngelis, Presley, & White, 2005; Goe, 2002; Goldhaber, Choi, & Cramer, 2007; Knoepfel, 2007; Lankford, Loeb, & Wyckoff, 2002; Lu, Shen, & Poppink, 2007; Peske & Haycock, 2006; U.S. Department of Education, 2002; Wayne, 2002), I also consider the extent to which reentrants contribute to the systematic sorting of teachers. My results both confirm and extend previous findings regarding returning teachers and their impact on schools.

Background

Economic theory indicates that individuals make labor market decisions with regard to whether and where to work based on the relative utility or satisfaction they expect to obtain from that decision compared to what they currently are doing (Boskin, 1974; Fleisher, 1970). Utility is derived from one's own preferences with regard to both the expected relative pecuniary (i.e., salary and benefits) and non-pecuniary (e.g., working conditions, psychic rewards) benefits, as well as the expected costs, of the decision. Individuals' personal characteristics, including gender, race/ethnicity, age, experience, and family context (e.g., marital status, number and ages of dependent children), influence their assessments of utility and, in turn, their labor market decisions.

There is ample evidence in the education literature that both prospective and practicing teachers make decisions that are consistent with this theory when considering whether to teacher (see, e.g., Dolton, 1990; Dolton & Makepeace, 1993; Hanushek & Pace, 1995; Manski, 1987; Podgursky, Monroe, & Watson, 2004; Shin & Moon, 2006; Stinebrickner, 2001) and where or whether to continue teaching (see, e.g., Borman & Dowling, 2008; Boyd, Lankford, Loeb, & Wyckoff, 2002; Guarino et al., 2006; Hanushek, Kain, & Rivkin, 2004; Imazeki, 2005; Murnane & Olsen, 1989, 1990; Scafidi, Sjoquist, & Stinebrickner, 2007; Stinebrickner, 1998, 2002). Teachers' personal and background characteristics, including gender, race/ethnicity, age, experience, education level, certification status, subject specialty, and academic ability, have been found to affect individuals' decisions both to enter teaching and to remain in particular schools or in the profession (see Borman & Dowling, 2008; Guarino et al., 2006 for reviews). Studies also have demonstrated that pecuniary benefits, as measured by teacher salaries, play a role in attracting individuals to the profession (Dolton, 1990; Dolton & Makepeace, 1993; Shin & Moon, 2006), as well as in determining where teachers teach and how long they remain in the profession (Grissmer & Kirby, 1992; Hanushek et al., 2004; Imazeki, 2005; Kirby, Berends, & Naftel, 1999; Lankford et al., 2002; Murnane & Olsen, 1989, 1990; Podgursky et al., 2004; Stinebrickner, 1998). Non-pecuniary factors, particularly working conditions, also have been found to contribute significantly to teachers' decisions. In general, schools and districts with less attractive working conditions, such as greater percentages of low-performing, low-income, and/or non-white students, poorer physical resources, and/or unsupportive school climates, have a more difficult time attracting and retaining teachers than those with more attractive conditions (Allensworth, Ponisciak, & Mazzeo, 2009; Borman & Dowling, 2008; Boyd, Grossman, Ing, Lankford, Loeb, & Wyckoff, 2011; Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Boyd, Lankford, Loeb, & Wyckoff, 2005a; Guarino et al., 2006; Hanushek et al., 2004; Ingersoll, 2001; Johnson & Birkeland, 2003; Kukla-Acevedo, 2009; Ladd, 2011; Loeb, Darling-Hammond, & Luczak, 2005; Scafidi et al., 2007).

The evidence base regarding former teachers' decisions to return to the profession is much more limited. The handful of studies that have been conducted focus primarily on the influence of former teachers' personal characteristics on their likelihood of returning. Like the literature on teacher recruitment and retention cited above, these studies indicate that certain teacher characteristics, including gender, age at entry or exit, race/ethnicity, and subject assignment, are important predictors of returning. The results, however, are based on only a small number of studies or are not entirely consistent. For example, Beaudin (1993) and Heyns (1988) reported that female teachers were more likely than male teachers to return to the profession, whereas Murnane et al. (1991) found the impact of gender depended on teachers' age at exit such that older females (≥ 30 when they left) were more likely than younger females and males of any age to return. Beaudin (1993) considered age at exit independent of gender and reported that teachers who were older (> 30 years old) when they left the profession were more likely to return than younger teachers. Singer

(1993) failed to find any gender or age effects in her study of returning special education teachers, a group not even represented in the Beaudin and Murnane et al. samples. The differences by gender and age that have been found are likely associated to some degree with family context variables, which are not available in the administrative datasets typically used. Studies with access to such information have found significant negative effects of marriage and the presence of small children on the labor force participation of females, including teachers (Dolton & Makepeace, 1993; Shin & Moon, 2006; Stinebrickner, 2001, 2002).

Among the return studies that considered the impact of teachers' race/ethnicity, the researchers were restricted by data limitations to focusing only on the difference between African American and White teachers. Beaudin (1995) and Singer (1993) reported a greater likelihood of returning among African American teachers, whereas Murnane et al. (1991) found no difference.

Three of the early studies also examined the impact of former teachers' subject specialty on return rates and found that science teachers were less likely to return than secondary teachers of other subject areas, and elementary teachers were more likely to return than secondary teachers overall (Beaudin, 1993, 1995; Murnane et al., 1991). Singer (1993) examined differences in return rates between special education teachers and regular education teachers and found significantly higher rates for special education teachers. Beaudin (1993) also reported that teachers with a master's or higher level degree were less likely than those with a bachelor's degree to return. As with teachers' decisions to leave the profession in the first place, the researchers cited differences in the opportunity cost of teaching as likely responsible for those results.

Notably absent from all but the Murnane et al. (1991) and Heyns (1988) studies was some measure of former teachers' academic aptitude. There has been growing concern since the 1970s about the academic ability of teachers, with studies showing that the education sector loses individuals with the most academic talent at every point in the pipeline from teacher preparation to teacher retention (see, e.g., Ballou, 1996; Hanushek & Pace, 1995; Lankford et al., 2002; Podgursky et al., 2004; Vance & Schlechty, 1982). Using North Carolina teachers' scores on the National Teacher Examination, Murnane et al.'s (1991) results suggested that the loss of academic talent extends to the reentry point as well; significantly fewer of the highest-scoring teachers in their sample returned to the profession after a year or more break in service compared to their lower-scoring colleagues. Heyns (1988), in contrast, found that both leavers and returners in her national sample scored somewhat higher on SAT exams than teachers who had not left the profession.

One of the most consistent findings within this literature is the vast majority of former teachers who returned did so after only a short absence (Beaudin, 1993; Greene & Lahti, 1984; Grissmer & Kirby, 1992; Murnane et al., 1988, 1991; Singer, 1993). Beaudin (1993) reported that nearly two-thirds of returning teachers in her sample interrupted their careers for just one year, and over 85% for no more than three years. Similarly, Murnane et al. (1988) found the median length of absence among returning teachers was one year. In a subsequent study, Beaudin (1995) noted that the length of time away had implications for where teachers returned — those with shorter absences (i.e., one or two years away) were significantly more likely to return to the districts they left than those who took extended breaks (i.e., more than two years away). Moreover, she found that returning teachers who had more years of experience when they left were more likely to return to their original districts.

Beaudin (1995) is the only study that considered *where* former teachers returned. Specifically, she examined teacher and district-based factors associated with returning to the former district as opposed to some other district. In addition to the effects of experience and length of absence noted above, she found that former teachers who were female, African American, and older at exit were more likely to return to their former districts, as were those who received higher starting salaries.

The schools to which reentrants return is an important issue given concerns regarding the inequitable sorting of teachers across schools. Though Boyd et al. (2002) found the match of teachers to schools at the time of initial hire and the movement of teachers across schools to have the greatest impacts on inequities in teacher distribution in New York, teachers' exit behaviors also had an effect. The impact of reentrants, however, has yet to be considered.

Research shows that schools with relatively high percentages of minority, low-income, and/or low performing students tend to employ less qualified teachers than schools serving more white, high-income, and/or high performing student populations (Betts et al., 2000; Clotfelter et al., 2006; DeAngelis et al., 2005; Goe, 2002; Goldhaber et al., 2007; Knoepfel, 2007; Lankford et al., 2002; Lu et al., 2007; Peske & Haycock, 2006; Wayne, 2002). The inequitable sorting of teachers stems from decisions and practices on both the supply and demand sides of the teacher labor market. As Loeb and Miller (2006) explained, wages, working conditions, and location preferences of teachers, combined with the preferences and hiring practices of district and school administrators, determine where teachers work. Absent much wage variation within and across districts within a region, teachers' preferences to work close to where they grew up and in schools with relatively more attractive working conditions have been found to have a strong influence on where well-qualified teachers ultimately teach (Boyd et al., 2005a, 2005b; Hanushek et al., 2004; Scafidi et al., 2007). In addition, the hiring practices and preferences of local administrators as well as policies that affect those practices also impact teacher distribution (Ballou, 1996; Boyd, Lankford, Loeb, Ronfeldt, & Wyckoff, 2011; Levin & Quinn, 2003; Murphy & DeArmond, 2003). Years of teaching experience is one of the qualifications of teachers that has been examined and targeted by federal and local policy efforts for redistribution given its association with teacher effectiveness (Loeb & Miller, 2006; Rice, Roellke, Sparks, & Kolbe, 2009; U.S. Department of Education, 2002). In addition to other attributes, returning teachers bring with them one or more years of prior teaching experience. It remains an empirical question whether the positive effects of experience carry over to new positions for teachers returning from a break in service. Nonetheless, it seems plausible that the knowledge and skills gained during an earlier period in the classroom would continue to provide some benefit relative to teachers with no experience at all.¹ To the extent that returning teachers have preferences that are similar to those exhibited by other teachers, it seems likely they would sort into schools with relatively more attractive working conditions upon reentry. On the other hand, little is known about the impact of other factors, such as demand conditions and districts' preferences for such teachers, on whether and where former teachers return, which makes it difficult to predict their distribution upon reentry. A survey-based study of the reserve pool (i.e., individuals certified to teach but not teaching) conducted during the early 1990s by the Oregon State Board of Education (1992) found local job availability to be a reason cited by the respondents for not working, although the respondents to that survey included both former teachers and individuals who had never taught.

In sum, the results of the small number of existing teacher return studies indicate that teachers' personal characteristics affect their decisions to return to teaching after a break in service

¹ There is some evidence that less effective teachers as measured by teachers' value-added to student achievement are more likely on average to leave the profession than more effective teachers (Boyd, Grossman, et al., 2009, 2011; Boyd, Lankford, et al., 2011; Goldhaber, Gross, & Player, 2011; Hanushek & Rivkin, 2010). Though this has potential implications regarding the relative effectiveness of returning teachers, it is not the case that only ineffective teachers leave. In fact, Goldhaber et al. (2011) showed that teachers who leave span the range of the effectiveness distribution. Unfortunately, my dataset does not permit me to assess the value-added of returning teachers nor how their effectiveness compares to that of new teachers with no prior experience.

much like they affect teachers' decisions to enter or leave the profession in the first place. Almost nothing is known, though, about the effects of other factors, such as school and district characteristics, on teachers' return decisions nor about where teachers return and how returning teachers contribute to the inequities that exist in the distribution of teachers across schools. This study aims to address these gaps. Moreover, all of the existing studies of returning teachers utilized cohort data from the 1970s and early 1980s. Changes in women's commitment to the labor market over the past few decades (Goldin, 2006) suggest that an examination of more recent cohorts of returning teachers is warranted.

Data and Methods

Data

This study employs data from Illinois, the fifth most populous state in the U.S. (U.S. Census Bureau, 2012). Illinois' K-12 education system is quite diverse with approximately 900 districts scattered across a wide range of urban, suburban, small town, and rural areas. In fact, about one quarter of Illinois' more than 4,000 schools are located in urban locales, while another quarter are located in rural settings. On average, Illinois students perform at or very near the national average on the National Assessment of Educational Progress tests (NCES, 2010).

The teacher data utilized in this study come from a number of sources. Teacher Service Record (TSR) files compiled and maintained by the Illinois State Board of Education (ISBE) provided the primary source for individual teacher information. Each annual TSR data file contains individual-level information for the population of public school teachers employed in Illinois in a given academic year (approximately 102,000 to 127,000 per year during the study period), including years of teaching experience both within and outside of the state, school and teaching assignments, position held, and highest degree earned. Charter school teachers are excluded due to the lack of information about such teachers in the TSR. This is a limitation given potential differences between traditional public schools teachers who move to a teaching position in a charter school versus those who remain in traditional public schools or leave public school teaching altogether (Carruthers, 2012). Twenty years of TSR data spanning the 1986-1987 (1987) to 2005-2006 (2006) academic years were pieced together to create the longitudinal dataset used in this study. These TSR data were supplemented with information regarding teachers' certification status and demographic characteristics (age, gender, race/ethnicity) taken from the Teacher Certification Information System (TCIS), which is also maintained by ISBE. Teachers' individual ACT composite scores were provided by ACT, Inc. Information on the characteristics of teachers' schools was gathered from public-use data from the National Center for Education Statistics' Common Core of Data (CCD) and the Illinois School Report Cards. Both sources provided annual information beginning in 1987. Finally, county-level annual average wage and unemployment rate information, which I utilize as rough indicators of labor market conditions in the county associated with the location of each teacher's school at the time of exit, was obtained from the Quarterly Census of Employment and Wages data compiled by the U.S. Bureau of Labor Statistics. All dollars were converted to constant 2000 dollars using the Midwest CPI.

The analyses in this study are based on full-time novice teachers (i.e., those with no prior teaching experience) who began their careers in the Illinois public schools (IPS) between 1987 and 2002. I restrict the sample to teachers who were 50 years old or younger at the time of exit in an attempt to exclude those who left on account of retirement. Between roughly 3,000 and 8,000 new teachers were hired each year during the timeframe of this study. The new teachers were followed from their year of entry until 2006, the last year of available data. The teachers were identified as

leavers if they appeared in the dataset as teachers in one year but did not appear as teachers in the subsequent year. Leavers were identified only through 2004 to allow for the possibility of reentry by 2006. Overall, 43% of the teachers in the sample left IPS during the study period.² *Returners* represent the subset of leavers who returned to teaching in the IPS at some point during the timeframe of this study. For consistency given my focus on teachers, the roughly two percent of leavers who returned to non-teaching positions in the IPS are excluded from the analyses. Because I am unable with these data to track teachers into private schools, charter schools, or schools outside of Illinois, the definitions of leavers and returners are restricted to teachers' movements out of and back into traditional Illinois public schools.

Table 1 describes the variables used in this study. I consider female and male teachers separately in many of the analyses due to prior research showing that female and male teachers leave the profession for different reasons and are affected differently by labor market factors (Greene & Lahti, 1984; Imazeki, 2005; Podgursky et al., 2004; Stinebrickner, 2001), both of which might affect their probability of returning. The teacher variables represent demographic characteristics and qualifications that have been shown in prior return and/or attrition studies to influence teachers' labor market decisions. Unfortunately, the dataset does not allow me to assess teachers' value-added to student achievement, a measure that would have provided valuable comparative information about returners and non-returners. All of the time-varying teacher characteristics are defined as of the year of exit except for certification status, which in keeping with teacher attrition studies reflects the teachers' level of preparation at entry. The ACT composite score quartiles are defined based on the population of teachers in Illinois rather than on the subset of the population considered in this study.³ Like most existing return studies, I define age as a categorical rather than continuous variable to ease comparison with the results from the earlier studies. In addition, the categories may help to capture some of the impact of family context, which has been shown to have an impact on labor market decisions, particularly for females, but about which I have no information (Dolton & Makepeace, 1993; Shin & Moon, 2006; Stinebrickner, 2001, 2002).

The school and district variables described in Table 1 serve as proxies for conditions in the teachers' positions at the time of exit that may have impacted their views of the profession and, hence, their likelihood of returning. Many of the characteristics have been found to be important in existing studies of teacher attrition (Borman & Dowling, 2008; Guarino et al., 2006). Because a consistent measure of student achievement across schools was available only for the most recent

² The proportion of leavers ranged from roughly 25% to 60% across cohorts, with the earlier cohorts registering higher attrition rates than the average 43% and the more recent cohorts registering lower rates. This variation is due in large part to the varying length of time each cohort was tracked in order to identify leavers (from 2 to 17 years). An analysis of the attrition rates of full- and part-time Illinois teachers during a consistent timeframe (i.e., teachers' first five years in the profession) showed substantially less cohort variation (36% to 47%) (DeAngelis & Presley, 2011). The analytic methods used in this study enable me to account for the variation in tracking periods across cohorts.

³ ACT scores are not available for approximately one-fifth of the teachers in this study. A teacher may have a missing ACT score because an inaccurate ID may have been used in the match of the TSR data with ACT information. Alternatively, the teacher may have taken the ACT prior to the years covered by the match (i.e., prior to 1978). It also is possible that the teacher did not take the ACT. Those in this latter category may have taken the SAT instead or may have attended a college that did not require the ACT for entrance. An examination of the other characteristics of these teachers did not reveal any systematic pattern to this missing information. Like Boyd, Lankford, Loeb, and Wyckoff (2008) did for college ranking, I include an unknown ACT indicator variable in the regression models in order to include those with missing ACT information and preserve sample size.

years (2002 through 2006), the influence of student achievement on leavers' decisions to return is not considered.

Table 1.

Description of Variables Used in the Analysis

<i>Variable Name</i>	<i>Description</i>
<i>Personal Characteristics</i>	
Gender	Females and males considered separately.
Race/Ethnicity	Teacher's race/ethnicity. White used as reference category.
Age at time of exit	<30 years old (reference category), 30-40 years old, 40-50 years old
Years of experience	Teacher's number of years of total teaching experience at time of exit. 1 year (reference category), 2-5 years, 6 or more years
Advanced Degree	Degree level at time of exit (MA or higher=1, BA=0).
Certification status	Based on status at time of entry. Categories: regular/standard (reference category), provisional, alternative, emergency.
Main Assignment	The subject area of teacher's primary teaching assignment at time of exit from profession. Self-contained elementary is reference category.
ACT Composite Score	Quartiles based on population of teachers in Illinois. Lowest (≤ 18), middle two quartiles (19-24 as reference), highest (≥ 25).
<i>School and District Characteristics</i>	
Different school	Indicator variable representing whether exit school was different from initial school at entry (1=different school, 0=initial school).
School % minority students	Percentage of non-white students in the teacher's exit school.
School % low-income students	Percentage of students who qualified for free- or reduced-priced lunch in the teacher's exit school.
School % ELL students	Percentage of English language learners in the teacher's exit school.
School enrollment	Total student enrollment in the teacher's exit school (scaled by 100).
School level	Level at time of exit. Elementary and middle schools were combined due to Chicago's use of K-8 schools. Only regular schools (elem/middle and high schools) were included. Elem/middle used as reference category.
Locale Type	Urbanicity of the teacher's exit school based on locale definitions from the NCES' Common Core of Data. Categories: Chicago, other urban, suburban (reference category), town, rural.
District % minority students	Percentage of non-white students in the teacher's exit district.
District % low-income students	Percentage of students who qualified for free- or reduced-priced lunch in the teacher's exit district.
District % ELL students	Percentage of English language learners in the teacher's exit district.
District enrollment	Total student enrollment in the teacher's exit district (scaled by 100).
% of teachers new to district	Percentage of teachers newly hired as a proxy for the demand for teachers in the teacher's exit district.
Teacher salary at exit	Actual teacher's salary at time of exit from profession (in 000's of \$2000).
<i>Other Variables</i>	
Opportunity wage	Average annual wage in the county associated with the location of the teacher's exit school (in 000's of \$2000).
Unemployment rate	Average annual unemployment rate in the county associated with the location of the teacher's exit school.
Regional dummies	Region in the state corresponding to teacher's exit school/district. There are 56 regions defined by the Illinois State Board of Education.
Time Away dummies	Indicator variables to capture the time (in years) former teachers spent out of the profession. These variables formed the baseline hazard in the discrete-time hazard models.
Exit Year dummies	Annual indicator variables to capture potential differences in return probabilities across time. 1987 used as the reference category.
Return Year dummies	Annual indicator variables to capture potential differences in demand conditions across time. 1987 used as the reference category.

This is a shortcoming given that student performance has been found to significantly affect teachers' decisions to change schools and leave the profession (Boyd et al., 2005a; Hanushek et al., 2004; Scafidi et al., 2007). The different school indicator is included to control for those who taught in more than one school prior to exiting. A teacher may change schools for voluntary (i.e., to find a better job fit) or involuntary (i.e., a school staffing action) reasons so it is not clear a priori whether those who change schools prior to leaving would be more or less likely to return. Nonetheless, I surmise that teachers in my sample who moved before leaving may differ in unmeasured ways from those who remained in their initial school and include the indicator variable to control for those differences.

For locale type, I distinguish Chicago public schools from other urban schools in Illinois due to the size of the Chicago public school district relative to other urban districts in the state. I utilize the annual percentage of teachers who were new to the former teachers' exit district as a measure of local job availability in teaching.

To control for potential differences in non-teaching opportunities across the state, I include three region-related variables. First, like Podgursky et al. (2004), I utilize county-level average annual wages to capture potential opportunity costs associated with returning to teaching. In addition, I include a county-average unemployment rate and regional dummy variables to control for demand and other labor market conditions in the area surrounding the teacher's exit school. Exit year indicators are included in the models as well to control for differences in return probabilities across time. For the analyses that consider where returning teachers work upon reentry, return year indicators are included to account for potential differences in teacher demand conditions across return years.

In Table 2, I report descriptive information overall and by gender for leavers, returners, and non-returners during the study period. Significance tests of differences between returners and non-returners are shown. Among those who left, 32.5% overall returned to teaching in the Illinois public schools by 2006, though females (32.9%) were slightly more likely to return than males (31.2%).⁴ The overall rate of return is consistent with those reported in studies that utilized teacher data from the 1970s and 1980s (Beaudin, 1993; Murnane et al., 1988; Singer, 1993; Stinebrickner, 2002). Moreover, as was found in the earlier studies, the vast majority of leavers who returned did so after only a brief absence. In fact, for both female and male reentrants, about half were away from the profession for just one year, three-quarters for no more than two years, and about 92% for no more than five years.

As Table 2 shows, teachers who left the profession and later returned differed in a number of ways from those who did not return. African American and Latino teachers overall, for example, constituted significantly greater proportions of returners than non-returners. The opposite was true for White teachers, both overall and by gender. Consistent with Murnane et al.'s (1991) earlier study, female teachers who were younger at the time of exit were less likely to return, whereas those who were older were more likely to do so. The return rates of male teachers, in contrast, showed no association with age. Leavers with advanced degrees also were less likely to return regardless of gender, as were those who entered with provisional or alternative certification. Former teachers who entered with regular/standard certification or emergency certification tended to be more likely to

⁴ Like the attrition rates across cohorts described in Note 2, return rates varied across cohorts and ranged from 18% to 42% depending on how long the leavers were tracked after exiting. For example, teachers who left following the 2004 academic year had only one year to be identified as reentrants because the dataset ends in 2006. In contrast, those who left after the 1987 academic year were tracked for up to 18 years. As noted earlier, the methods used in this study enable me to account for this variation across cohorts.

return. Similar to the findings in earlier studies (Beaudin, 1993; Murnane et al., 1988, 1991; Singer, 1993), leavers' return rates differed by subject assignment; those who taught science or math were less likely than former elementary teachers to return, whereas those who taught special education were more likely to return. Teachers' academic background as measured by their ACT composite score mattered as well, although only for females. Specifically, a significantly smaller percentage of former female teachers who scored in the highest ACT quartile returned, whereas a significantly larger percentage of those who scored in the lowest quartile did so. In contrast, the proportions of male returners and non-returners did not depend on ACT scores.

Table 2.

Descriptive Statistics for Leavers, Returners, and Non-returners, Overall and by Gender

	Overall			Female			Male		
	Leavers	Returners	Non-returners	Leavers	Returners	Non-returners	Leavers	Returners	Non-returners
<i>Personal Characteristics</i>									
% Female	80.4	81.2	80.0*	-	-	-	-	-	-
<i>Race/ethnicity</i>									
% African American	6.8	10.0	5.3***	6.5	9.8	4.8***	8.3	10.8	7.2***
% Latino	5.0	5.8	4.7***	4.5	5.5	4.1***	7.0	7.1	6.9
% White	86.5	82.7	88.3***	87.4	83.2	89.4***	82.9	80.7	83.9**
% Other, non-White	1.7	1.5	1.7	1.6	1.5	1.7	1.8	1.4	2.0
<i>Age</i>									
% under 30	54.7	53.6	55.3**	55.6	54.1	56.4***	51.1	51.7	50.9
% 30-40	36.5	36.4	36.6	36.3	36.4	36.2	37.4	36.1	37.9
% 40-50	8.8	10.0	8.1***	8.1	9.5	7.4***	11.5	12.2	11.2
<i>Years of experience</i>									
% 1 year	22.7	27.3	20.5***	21.2	25.7	18.9***	29.0	34.1	26.6***
% 2-5 years	53.7	49.4	55.8***	53.5	49.0	55.7***	54.6	50.9	56.3***
% ≥ 6 years	23.6	23.3	23.7	25.3	25.3	25.3	16.5	15.0	17.1
% Advanced degree	22.9	19.6	24.4***	23.8	20.7	25.3***	18.9	14.9	20.7***
<i>Certification status at entry</i>									
% Regular/Standard	86.3	87.0	85.9*	88.3	88.3	88.3	77.9	81.3	76.3***
% Provisional	7.4	5.6	8.3***	6.3	5.3	6.7***	12.2	7.1	14.5***
% Alternative	0.2	0.1	0.3***	0.2	0.1	0.3***	0.2	0.1	0.3
% Emergency	6.1	7.3	5.5***	5.2	6.3	4.6***	9.7	11.6	8.8***
<i>Main Assignment</i>									
% Elementary	34.8	34.9	34.8	39.4	39.3	39.5	15.8	16.0	15.8
<i>Mathematics</i>									
% Science	6.3	5.8	6.6*	5.6	5.1	5.8*	9.3	8.6	9.6
<i>Special education</i>									
% Science	6.3	5.3	6.7***	5.1	4.5	5.4**	11.1	9.0	12.0***
% Special education	13.3	15.1	12.4***	15.1	16.9	14.3***	5.7	7.1	5.1**
<i>Other subjects</i>									
% Other subjects	39.3	38.9	39.5	34.8	34.2	35.0	58.1	59.3	57.5
<i>ACT composite score</i>									
% ≥ 25	29.7	26.2	31.5***	28.2	24.6	30.0***	36.9	33.8	38.3
% 19-24	51.9	51.1	52.2	53.2	52.1	53.7	45.9	46.4	45.6
% ≤ 18	18.4	22.7	16.3***	18.6	23.3	16.3***	17.2	19.8	16.1
<i>School and District Characteristics</i>									

% Different school	26.9	27.0	26.8	27.4	27.3	27.5	24.6	26.0	24.0
School level									
% Elementary / middle	93.2	92.9	93.4	95.0	95.0	95.0	85.8	83.8	86.7**
% High	6.8	7.1	6.6	5.0	5.0	5.0	14.2	16.2	13.3**
Locale									
% Chicago	19.9	22.8	18.5***	19.3	22.5	17.7***	22.4	24.4	21.5*
% Other urban	10.3	9.5	10.7	10.6	9.5	11.0*	9.4	9.1	9.4
% Suburban	46.3	42.7	48.1***	48.6	44.1	50.8***	37.0	36.9	37.0
% Town	9.3	10.1	8.9***	8.6	9.8	8.1***	11.8	11.4	12.0
% Rural	14.2	14.9	13.9*	12.9	14.1	12.4***	19.4	18.1	20.1
Mean school % non-white students	37.7 (36.4)	39.8 (37.6)	36.7 (35.8)***	37.6 (35.9)	39.6 (37.3)	36.6 (35.2)***	38.3 (38.2)	40.3 (38.7)	37.4 (38.0)**
Mean school % low-income students	33.7 (32.5)	36.1 (33.1)	32.5 (32.1)***	33.4 (32.5)	36.3 (33.2)	32.0 (32.0)***	34.6 (32.3)	35.5 (32.7)	34.1 (32.2)
Mean school % English language learners	6.7 (12.8)	6.9 (13.2)	6.6 (12.6)	6.8 (12.8)	7.1 (13.4)	6.7 (12.5)***	6.1 (12.6)	5.8 (12.1)	6.2 (12.9)
Mean school enrollment	781.0 (643.4)	772.4 (646.0)	785.2 (642.1)	751.0 (612.1)	739.3 (604.6)	756.8 (615.7)*	903.3 (745.4)	915.4 (784.7)	897.9 (727.0)
Mean district % non-white students	36.8 (34.9)	38.8 (36.0)	35.9 (34.3)***	36.7 (34.4)	38.7 (35.8)	35.7 (33.7)***	37.2 (36.6)	39.1 (37.1)	36.3 (36.3)**
Mean district % low-income students	33.4 (29.7)	35.6 (30.1)	32.3 (29.5)***	32.8 (29.7)	35.3 (30.2)	31.5 (29.4)***	35.9 (29.6)	36.8 (29.9)	35.6 (29.4)
Mean district % English language learners	6.1 (7.7)	6.3 (7.6)	6.0 (7.7)**	6.1 (7.6)	6.3 (7.6)	6.0 (7.6)**	6.0 (8.1)	6.2 (7.7)	5.9 (8.2)
Mean district enrollment	87,331 (164,667)	98,980 (172,492)	81,712 (160,460)**	84,940 (162,790)	97,497 (171,561)	78,785 (157,955)**	97,119 (171,808)	105,411 (176,378)	93,381 (169,599)
Mean % of teachers new to district	10.7 (5.9)	10.2 (5.7)	10.9 (6.0)***	10.7 (5.8)	10.3 (5.7)	10.9 (5.8)***	10.7 (6.5)	10.2 (6.1)	10.9 (6.7)***
Mean Teachers' salary	33.1 (8.1)	33.0 (8.3)	33.1 (7.9)	33.1 (8.0)	33.1 (8.4)	33.1 (7.8)	32.9 (8.1)	32.7 (8.0)	33.0 (8.2)
<i>Regional Characteristics</i>									
Mean Alternative wage	36.2 (9.0)	34.4 (8.6)	37.0 (9.0)***	36.5 (8.8)	34.6 (8.5)	37.5 (8.8)***	34.6 (9.5)	33.3 (8.9)	35.2 (9.7)***
Mean Unemployment rate	4.9 (1.1)	5.6 (1.4)	4.5 (0.6)***	4.9 (1.1)	5.6 (1.4)	4.5 (0.6)***	4.9 (1.0)	5.6 (1.4)	4.6 (0.6)***
% of Leavers that returned		32.5			32.9			31.2	
N	28273	9201	19072	22730	7474	15256	5543	1727	3816

Table 2 also reveals some differences between returners and non-returners based on the characteristics of their exit schools and districts. The differences, however, are not always in the direction one might predict. For example, female teachers who left schools and districts with *higher* average percentages of non-white, low-income, and ELL students were more likely to return than those who left schools and districts with lower percentages of students with those characteristics. The same was true for male leavers but only with regard to the percentage of non-white students. Table 2 also shows gender differences associated with locale type. Female leavers from Chicago,

town, and rural schools were more likely to return, whereas those from other urban and suburban schools were less likely to return. The percentages of returners and non-returners by locale type for male teachers only differed (in favor of returning) for those who left Chicago schools. Both female and male teachers who left larger districts also were more likely to return, although those enrollment averages are likely heavily influenced by leavers from the Chicago public school district.

Labor market conditions outside of education also were associated with whether or not teachers who left Illinois schools returned during the period of this study. For both females and males, leavers from counties with higher average annual wages and lower average unemployment rates were less likely to return (Table 2).

Of course, the single-attribute comparisons of returners and non-returners reflected in Table 2 do not take into account other characteristics of the former teachers and their schools, districts, and local labor markets that may have affected their career decisions. Multivariate analyses of leavers' decisions regarding whether and where to return are presented following the description of methods.

Methods

In this study, I employ different methodologies to examine the factors associated with whether former teachers in Illinois returned and, if so, where they returned, as well as the sorting of reentrants across schools. I describe each approach in turn below.

Factors associated with whether former teachers return

Because teachers are tracked for a finite period of time in this study, the decision by some leavers to return to the IPS may not have been observed. That is, it is probable that some leavers, particularly those who left near the end of the study period, returned to IPS after 2006, the last year for which I have data. As a result, the return decisions by some former teachers are right-censored (Singer & Willett, 2003). To account properly for this censoring in my examination of factors associated with whether former teachers returned, I utilize discrete-time hazard models. This approach enables me to assess the probability that a leaver returns to teaching in a given year, conditional on not having returned prior to that year (Willett & Singer, 1993). This conditional probability of reentry into teaching is referred to as the hazard rate (Willett & Singer, 1993). To estimate the hazard models, I constructed a data file that includes one observation for each unit of time (i.e., each academic year) that each leaver was "at risk" of returning to IPS. For each observation, the dependent variable indicates whether the individual returned or not. The last observation in the dataset for each individual is the year of return or 2006, whichever came first.

The hazard model is estimated using logistic regression such that

$$\text{logit} \{ \Pr(y_{it}=1 | d_{it}) \} = [\alpha_2 d_{2it} + \dots + \alpha_{18} d_{18it}] + \beta X_{it} + \gamma_i + \lambda_i$$

where y_{it} is the outcome (return=1, did not return=0) for leaver i in year t , the d_{it} are the time away indicator variables representing each year leaver i spent away from IPS, X_{it} is a vector of time-varying and time-invariant predictor variables for leaver i in year t described in Table 1, γ_i is a vector of exit year indicator variables representing the exit year of leaver i , and λ_i is a vector of indicator variables representing the region in the state in which leaver i 's exit school was located. The exit year and region indicators are included to control for potentially unique labor market conditions across time and regions of the state, respectively. Like Guarino, Brown, and Wyse (2011), I account for potential serial correlation within individuals by using cluster-adjusted standard errors.

Factors associated with where former teachers return

To address the second issue regarding where returners teach upon reentry, I estimate traditional multinomial logit models with a three-category dependent variable that includes returning

to the same school, returning to a different school within the same district, or returning to a different district as observed outcomes. Returning to a different district is used as the baseline category. These models include only the subset of leavers who returned to teaching in IPS by 2006. The data file for this analysis includes one observation per individual corresponding to the year in which he or she returned. The independent variables in these multinomial models differ from those in the hazard models described above in two ways: (1) the non-teaching labor market condition variables (i.e., county-level alternative wage and unemployment rate) are excluded since those are likely to impact whether a leaver returns to teaching, not the school to which the leaver returns⁵ and (2) rather than exit year indicators, return year indicators are included to account for potential differences in teacher demand conditions across time. Again, models for females and males are estimated separately to determine whether the factors associated with reentry school location differ by gender.

Sorting of Returning Teachers.

In the final analyses, I use descriptive statistics first to compare the characteristics of returning teachers across schools with varying student characteristics. In the absence of direct information regarding reentrants' effectiveness in the classroom, I consider four proxies, including ACT score quartile, years of teaching experience, advanced degree, and certification status. The first two characteristics have been most consistently linked to teaching effectiveness (Rice, 2003; Wayne & Youngs, 2003), but variations of all four have been examined in prior studies of teacher sorting. I categorize schools into quartiles based on the percentages of non-white and low-income students in each school. I report reentrants' attributes for both the exit schools and return schools with the quartiles for both based on the distributions of the student characteristics among the return schools so that the quartiles are defined consistently. This analysis provides a look at the sorting of reentrants both before leaving and after returning and allows me to examine whether that sorting worsened or improved upon reentry. In addition, I compare the average characteristics of the schools the former teachers left with those of the schools they entered upon returning. I distinguish among those who returned to the same school, a different school in the same district, and a different district. Because of the time gap between exit and reentry of one or more years for all returners, I report average year of exit and year of return school characteristics even for those who returned to the same school. This analysis provides a different perspective based on average school characteristics and reentry location on how returning teachers contribute to the sorting of teachers across schools.

Results

Factors associated with whether former teachers return

The baseline hazard functions presented in Figure 1 show the risk or hazard probability of returning to teaching for female and male leavers based on the number of years spent out of teaching. As one can see, the probability of returning to teaching is highest following the leavers' first year out of teaching and declines quickly thereafter. In general, the hazard probabilities are very similar for female and male leavers during their first six years out of the profession, after which time the return risk for females tends to be slightly higher than it is for males. This indicates that females are somewhat more likely than males to return to teaching following an extended break in service, although the probabilities even for female leavers are very small after the first few years.

⁵ Models including the county-level alternative wage and unemployment rate measures confirmed that those variables had no impact on where leavers returned.

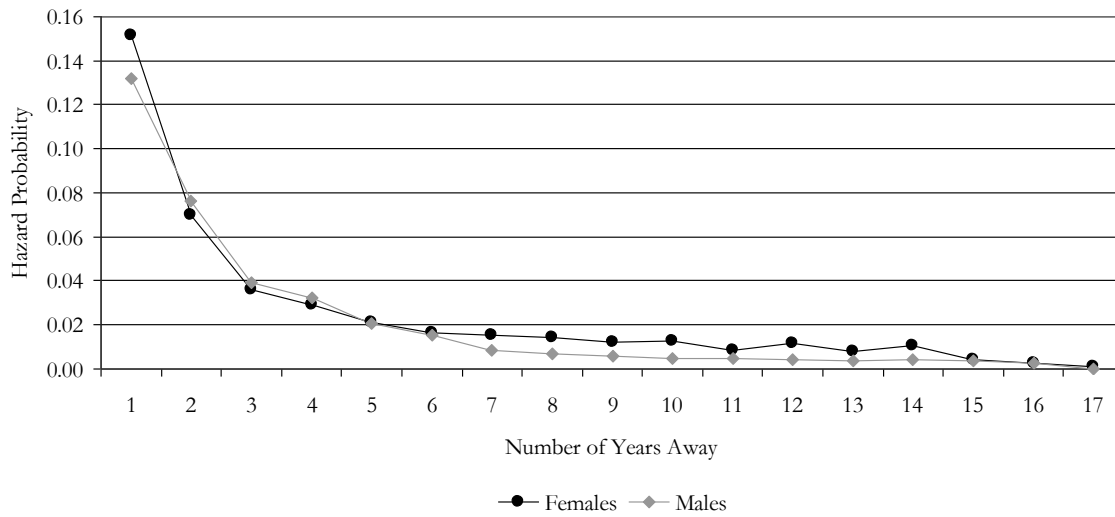


Figure 1. Risk of Returning to Teaching by Gender and Number of Years Away

Notwithstanding the similarity of the hazard profiles, I estimate the multivariate hazard models for females and males separately because prior research suggests that factors associated with returning may differ by gender. In Table 3 Model I, I consider only the impact of teacher characteristics on the likelihood of returning in order to compare my results to the findings from existing studies. In Model II, I add school, district, and regional variables to assess their impact on whether leavers return. Estimated odds ratios are reported in the table. An odds ratio significantly greater than one indicates a greater likelihood of event occurrence (i.e., returning), whereas an odds ratio significantly less than one indicates a lower likelihood.

Consistent with prior return studies, the results for Model I in Table 3 show that the personal characteristics of former teachers in Illinois were significantly associated with their return behaviors, although the effects varied somewhat by gender. With regard to race/ethnicity, African American and Latino leavers of both genders were more likely to return after a break in service than White leavers. Those with other, non-White racial/ethnic backgrounds were as likely as White leavers to return. Age at exit also had an impact. Among females, those aged 30 and older when they left were more likely to return than those under 30, which is consistent with Murnane et al.'s (1991) findings. The impact of age for males, in contrast, differed only between the youngest and oldest groups, with those over 40 showing greater odds of returning. Though Murnane et al. (1991) and Singer (1993) reported a positive effect of years of experience on returning, my results reveal a significant, non-linear effect such that leavers with two to five years of experience were less likely to return than those with only one year of experience at the time of exit. A closer examination of the impact of years of experience using a series of indicator variables (rather than the categorical variables) showed that female and male teachers with two or three years of experience at exit had the lowest odds of returning compared to those with one year.

Table 3.
Logistic Regression Analysis of Factors Affecting the Probability of Returning to Teaching by Gender

	Females		Males	
	Model I	Model II	Model I	Model II
<i>Personal Characteristics</i>				
Race/Ethnicity (White is reference)				
African American	1.640 ***	1.598 ***	1.330 ***	1.199
Latino	1.621 ***	1.480 ***	1.655 ***	1.519 ***
Other, Non-white	1.118	1.075	1.010	0.886
Age (under 30 is reference)				
30-40 years old	1.175 ***	1.148 ***	1.088	1.087
40-50 years old	1.451 ***	1.421 ***	1.273 **	1.345 **
Years of experience (1 is reference)				
2-5	0.868***	0.775***	0.865**	0.748***
≥ 6	1.012	1.018	0.978	0.878
Advanced degree	0.817 ***	0.766 ***	0.740 ***	0.653 ***
Certification status at entry (regular/standard is reference)				
Provisional	0.679 ***	0.657 ***	0.436 ***	0.445 ***
Alternative	0.525	0.498	0.419	0.343
Emergency	0.930	0.887*	0.926	0.881
Main Assignment (elementary is reference)				
Math	0.998	1.016	0.899	0.915
Science	0.939	0.870 *	0.815 *	0.877
Special Education	1.167 ***	1.185 ***	1.274 *	1.165
Other subjects	1.035	1.024	1.042	1.057
ACT composite score (19-24 is reference)				
≥ 25	0.911 **	0.913 **	0.950	0.876
< 19	1.199 ***	1.192 ***	1.088	1.099
<i>School and District Characteristics</i>				
Different school		1.042		1.212 **
School Level (elementary/middle is reference)				
High school		0.741 ***		0.942
Locale Type (Suburban is reference)				
Chicago		1.026		1.511
Other urban		0.926		0.995
Town		1.093		1.272
Rural		1.255 ***		1.185
School % non-white students		0.997 *		1.003
School % low-Income students		1.004 **		0.999
School % ELL students		1.001		0.996
Total school enrollment		1.007 *		1.003
District % non-white students		0.999		0.992
District % low-Income students		1.003		1.006
District % ELL students		1.000		1.003
Total district enrollment		1.000		1.000
% of teachers new to district		1.001		1.006
Teacher salary at exit (000's of \$2000)		1.016 ***		1.010 *
<i>Regional Characteristics</i>				
Alternative wage (000's of \$2000)		1.154 ***		1.104 ***
Unemployment rate		0.974		0.980
Baseline hazard dummies	Yes	Yes	Yes	Yes
Exit cohort dummies	Yes	Yes	Yes	Yes
Regional dummies		Yes		Yes
Likelihood ratio test (χ^2)	7828.65 ***	7372.57 ***	1612.44 ***	1623.07 ***
Hosmer & Lemeshow goodness-of-fit test (χ^2)	12.22	13.47	9.56	10.25

Similar to Beaudin's (1993) results, leavers with an advanced degree had significantly lower odds of returning, regardless of gender. Similarly, those who entered teaching in Illinois with

provisional certification were less likely to return after a break in service than those who entered with standard certification. Interestingly, teachers who entered with alternative or emergency certification were as likely to return as those with standard certification, although the small sample size of those with alternative certification suggests that result should be interpreted cautiously.

As was found in earlier studies (Beaudin, 1993, 1995; Murnane et al., 1988, 1991; Singer, 1993), the likelihood of returning varied by teachers' subject specialty. Former male science teachers were significantly less likely than former male elementary teachers to return, whereas both female and male former special education teachers were more likely than their elementary counterparts to return. Finally, female leavers in the highest quartile of ACT scores were significantly less likely to return to the profession than teachers with mid-range ACT scores, whereas those from the lowest quartile were more likely to return.

The effects of school, district, and regional characteristics are shown in Model II of the same table. Because teachers are not distributed randomly across schools, the teacher characteristics from Model I also are included in Model II to control for differences that have been shown to exist in the characteristics of teachers across Illinois schools (DeAngelis et al., 2005). The results indicate that some of these job-related characteristics also influenced whether leavers returned, albeit differently by gender. For example, females who left rural schools had greater odds of returning than those who left suburban schools, whereas locale of exit school was not associated with males' odds of returning. Moreover, the level, size, and percentages of non-white and low-income students in leavers' schools had an impact on females but not males. Interestingly, teaching salary was the only job-based characteristic associated with whether males returned. For female leavers, in contrast, both pecuniary (i.e., salary) and non-pecuniary school-based factors affected whether they returned.

Model II in Table 3 shows that conditions in the region also have some impact. The results for both male and female leavers indicate that higher alternative wages in the county were associated with greater odds of returning, controlling for other characteristics including region of the state. It may be that counties with higher alternative wages within each region possessed other conditions that prompted former teachers to return to the classroom, such as unmeasured conditions in the schools that made teaching relatively more attractive, higher costs of living that necessitated a return to work, or perhaps even higher second incomes among dual-income households that enabled leavers to return to teaching as opposed to some other occupation. The unemployment rate in the county, in contrast, was not associated with the former teachers' decisions to return.

Factors associated with where former teachers return

Before turning to the multinomial regression results, I show in Figure 2 descriptive information regarding actual percentages of reentrants overall and by select teacher and exit school characteristics. I differentiate among those who returned to the same school, to a different school in the same district, and to a different district. Overall, 28.4% of reentrants returned to the school they had left, another 19.1% returned to a different school in the same district, and 52.5% began teaching again in a new district altogether. Figure 2 reveals that where former teachers returned was associated with both their own characteristics and the characteristics of their exit schools. For example, male teachers were more likely to teach in a different district upon reentry than female teachers, as were White teachers compared to non-White teachers. Similarly, and consistent with Beaudin's (1995) findings, those who had fewer years of experience at exit or who spent more time away from teaching were more likely to reenter in a different district.

In terms of exit school characteristics, teachers who left schools in town and rural locales were least likely to return to their former school or district. Moreover, those who left schools with the lowest percentages of low-income students also were less likely to return to the school and/or

district they exited. A very similar pattern was found based on the percentages of non-white students (not shown).

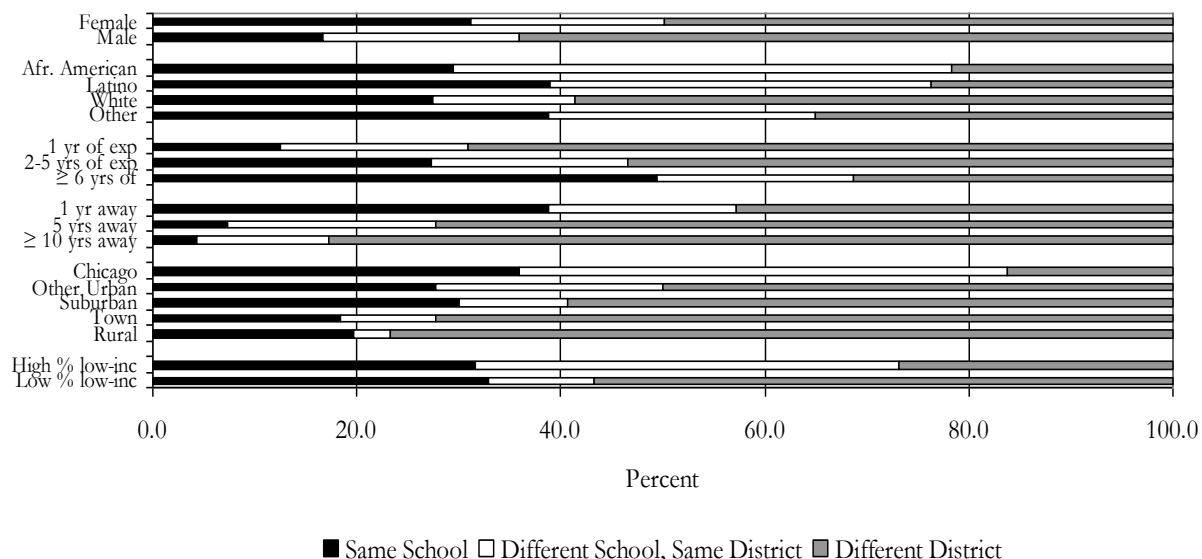


Figure 2. Where Reentrants Returned by Select Teacher and Exit School Characteristics

Among the majority of former teachers who reentered the profession in a different district, those who exited urban schools (including Chicago) were most likely to return to schools in another locale type, most often suburban schools (Figure 3).

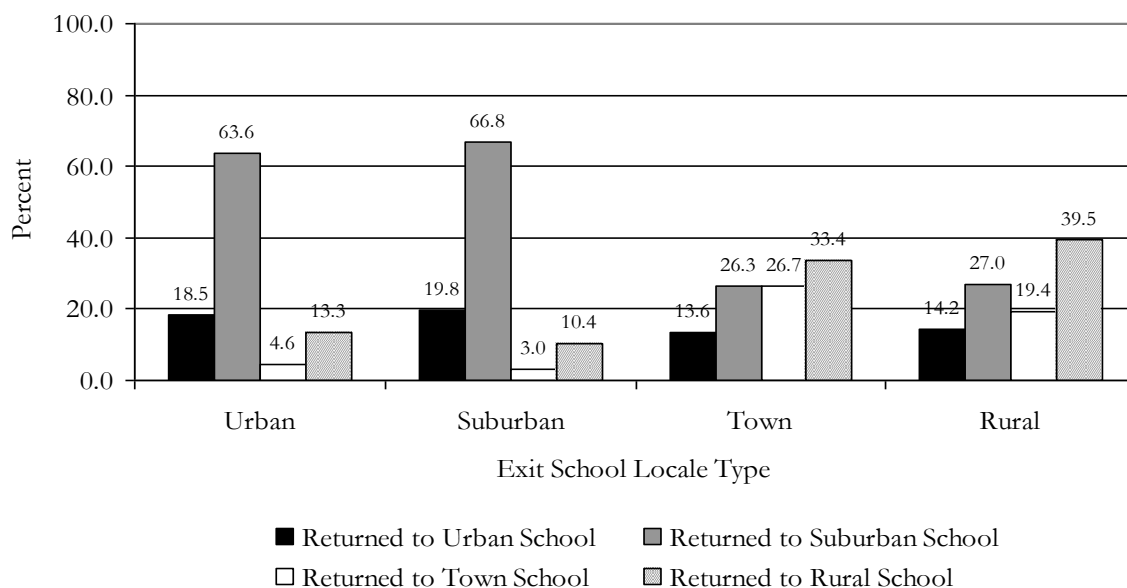


Figure 3. Return School Locale Type for Those Who Returned to a Different District by the Locale Type of the School They Exited

Those who exited suburban schools, in contrast, typically returned to suburban schools, albeit in a different district. The return destinations of returners who exited town and rural schools were more mixed, though only a minority of those returners ended up in schools of the same locale type.

Without controlling for the multiple characteristics of teachers and their exit schools and districts, it is not possible to determine the marginal impact of particular factors on where returning teachers reentered the profession. Table 4 shows the results of the multinomial regression analyses that incorporate multiple teacher, school, and district characteristics. I use returning to a different district as the base category. Relative risk ratios are reported in the table. Like the odds ratios in Table 3, a relative risk ratio significantly greater than one indicates a greater likelihood of that event occurrence (i.e., returning to the same school as opposed to a different district), whereas a relative risk ratio significantly less than one indicates a lower likelihood. Again, I consider female and male returners in separate models.

Controlling for other teacher, school, and district characteristics, Table 4 shows that African American and Latino female reentrants and African American male reentrants were more likely to return to the school that they left than White reentrants. The same is true with regard to returning to a different school in the same district, although only for females. Females who were 30-40 years old at the time of exit also were more likely to return to their former school or district compared to younger female leavers, whereas older females were similarly likely to return. For male reentrants, age at exit was not associated with where they returned. Similar to Beaudin's (1995) findings, former teachers with more years of experience at the time of exit (regardless of gender) were significantly more likely to return to their former school or district compared to those with only one year of experience. Likewise for those who spent fewer years away from the profession, particularly with regard to returning to the same school. Degree level, certification status, and ACT score quartile showed no relation with where reentrants returned, with the exception that teachers who entered the profession with emergency certification were more likely to return to the same school (males only) or district (males and females). In contrast, former teachers' subject specialty was significantly related to where they returned, although primarily for females. Compared to elementary teachers, math, science, special education, and other subject area female teachers all were less likely to return to their exit school or district, perhaps due to the generally greater demand for such teachers.

Turning to the school and district characteristics associated with where returning teachers taught upon reentry, Table 4 shows that job-related factors again seem to have a greater impact on female than male reentrants. For example, females who left high schools were significantly less likely to return to the same school, even controlling for subject assignment, compared to those who left elementary/middle schools. Similarly, females from Chicago schools were less likely to return to the same school or to the Chicago public school district than those from suburban schools. The same was true for female returners from rural schools in terms of being less likely to return to their former district. In contrast, those who exited town schools were more likely than their suburban counterparts to return to the same district. Among male returners, those who exited town and rural schools were significantly less likely than those from suburban schools to return to the same district, whereas those from non-Chicago urban schools were more likely to return. Reentrants from larger schools were more likely to return to those schools regardless of gender, perhaps due to the greater opportunities likely available in larger schools. Like Beaudin (1995), my results also indicate that both female and male reentrants who earned higher salaries at the time of exit (controlling for degree level and years of experience) were more likely to return to their former school or district.

Table 4.
Multinomial Regression Analysis of Factors Associated with Where Returners Teach Upon Reentry by Gender

	Females		Males	
	Same School	Different School, Same District	Same School	Different School, Same District
<i>Personal Characteristics</i>				
Race/Ethnicity (White is reference)				
African American	1.635 **	2.266 ***	4.486 ***	1.752
Latino	2.218 ***	2.347 ***	1.550	1.107
Other, Non-white	1.568	1.482	0.660	0.452
Age (under 30 is reference)				
30-40 years old	1.416 ***	1.438 ***	1.184	0.978
40-50 years old	0.964	1.250	0.945	1.728
Years of experience (1 is reference)				
2-5	2.562***	1.520***	3.098***	1.635
≥ 6	4.896***	2.220***	4.435***	2.121
# of Years Away (≥ 8 years away is reference)				
1	17.635 ***	1.839 **	23.337 **	0.989
2	7.209 ***	1.557 *	12.195 *	1.318
3	3.828 ***	1.498	6.100	0.741
4	3.563 **	1.211	4.225	1.124
5	1.925	1.413	3.610	0.935
6	2.047	1.665	2.710	0.458
7	2.134	1.013	3.064	0.765
Advanced degree	0.937	1.067	0.919	1.060
Certification status at entry (Regular/Standard is reference)				
Provisional	1.119	0.994	1.896	1.049
Alternative	1.707	0.507	-	-
Emergency	1.205	1.673 **	1.981 *	2.944 ***
Main Assignment (Elementary is reference)				
Math	0.645 **	0.536 **	0.579	0.849
Science	0.666 *	0.402 ***	0.675	0.467
Special Education	0.439 ***	0.544 ***	0.357 *	0.593
Other subjects	0.557 ***	0.474 ***	0.623	0.922
ACT composite score (19-24 is reference)				
≥ 25	0.962	1.030	1.186	0.818
< 19	0.901	0.930	0.991	0.943
<i>School and District Characteristics</i>				
Different school	0.613***	0.929	0.418 ***	1.080
School Level (Elementary/middle is reference)				
High school	0.492 ***	0.787	1.177	1.231
Locale Type (Suburban is reference)				
Chicago	0.0001 **	5.54e-9 ***	.0001	.0001
Other urban	1.130	1.334	1.382	2.501 *
Town	1.312	1.696 *	1.904	4.16e-11 ***
Rural	1.214	0.485**	1.664	6.53e-12 ***
School % non-white students	0.986 ***	0.999	0.981	0.995
School % low-Income students	1.005	1.010*	1.003	1.001
School % ELL students	0.992 *	0.989 **	1.004	1.013
Total school enrollment	1.015 *	0.988	1.042 **	0.979
District % non-white students	1.008	0.991	1.022	1.005
District % low-Income students	0.990	0.996	0.991	1.008
District % ELL students	1.017 *	1.032 **	0.989	0.998
Total district enrollment	1.003 ***	1.005 ***	1.003	1.002
% of teachers new to district	0.993	0.996	1.012	1.005
Teacher salary at exit	1.068 ***	1.034 *	1.052**	0.990
Return year dummies	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes
Likelihood ratio test (χ^2)	3609.11 ***		1130.66 ***	

Sorting of Returning Teachers

In Table 5, I show select attributes of returning teachers by exit and return school quartiles as determined by the percentages of low-income students in the schools. The results based on the percentages of non-White students in the schools are nearly identical so they are not shown. I do not distinguish between female and male returners in this table in order to avoid problems with small sample sizes. Differences in teacher attributes across the quartiles within school type (i.e., exit schools, return schools) reflect the extent to which returning teachers were sorted across schools with different student characteristics. The asterisks in the highest quartile columns reflect statistically significant differences with the results in the corresponding lowest quartile column.

Consistent with prior research regarding the sorting of teachers across schools, the results in Table 5 show that Illinois teachers who left and later returned were sorted inequitably across both the schools that they left and the schools to which they returned. For example, a significantly higher percentage of returners who scored in the highest ACT quartile taught in schools with the lowest percentages of low-income students than in schools with the highest percentages of those students. Returning teachers who scored in the lowest ACT quartile, in contrast, were significantly more likely to teach in schools with the highest percentages of low-income students. Similarly, returning teachers who entered the profession with emergency certification were more likely to teach in schools with greater percentages of economically-disadvantaged students. Notwithstanding the recent policy focus on inequities in the distribution of teachers by experience level, my results show little difference in the distribution of returning teachers by experience level across the quartiles of the schools they left (exit schools) and the schools to which they returned (return schools).

Differences in teacher attributes between exit and return schools *within* each quartile provide an indication of the extent to which the sorting of returning teachers across school quartiles became more or less equitable between their exit and return. Statistical tests of the differences in teacher attributes between the exit and return schools within each of the quartiles shown in Table 5 revealed no significant differences. This indicates that returning teachers on average tended to return to schools that were similar at least in terms of student demographics to the schools that they left.

Table 5.

Return Teacher Attributes By Exit School and Return School Quartiles for Percent Low-Income Students

	Percent Low-Income Students							
	Lowest Quartile		2 nd Quartile		3 rd Quartile		Highest Quartile	
	Exit	Return	Exit	Return	Exit	Return	Exit	Return
ACT Composite Score								
% ≥ 25	35.1	33.6	29.5	29.1	21.5	24.0	15.7***	15.7***
% ≤ 18	14.6	14.8	17.4	17.3	21.8	22.4	41.1***	40.3***
Years of Teaching Experience								
% 1 year	23.9	25.6	30.1	26.7	29.7	28.8	26.9	27.9
% 2-5 years	48.0	48.0	48.7	49.8	48.4	49.5	50.7	50.1
% ≥ 6 years	28.1	26.4	21.2	23.5	21.9	21.7	22.4*	22.0
% Advanced Degree	26.6	24.7	15.6	17.0	16.1	16.1	20.2*	20.2
Certification Status (at entry)								
% Regular/Standard	95.7	94.7	95.7	95.5	89.9	89.8	65.8***	66.9***
% Provisional	2.9	3.4	2.3	2.5	4.8	5.1	12.8	12.4
% Alternative	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.2
% Emergency	1.4	1.8	2.0	2.0	5.3	5.1	21.1*	20.5*

In Table 6, I consider whether the sorting of reentrants depended on where they returned by examining differences in the characteristics of the return and exit schools for those who returned to the same school, a different school within the same district, or a different district. In addition to select student and teacher characteristics in the schools, I consider an indicator of mean student performance for the small subset of teachers who exited and returned between 2002 and 2006, the only years when such data were availability. Table 6 shows the comparisons for returning teachers overall and by select locale types of the exit school (urban and rural only). Comparisons of additional subgroups based on other characteristics, including gender, years of teaching experience, number of years away from the profession, ACT score quartile, and suburban and town locale types, revealed little difference with the overall results presented in Table 6.

Table 6.

Characteristics of Exit and Return Schools for Returning Teachers, Overall and by Select Locale Types

	Same School			Different School, Same District			Different District		
	At Time of Exit	At Time of Return	Difference	Exit School	Return School	Difference	Exit School	Return School	Difference
All Returners									
% minority students	0.424	0.443	0.019	0.665	0.675	0.010	0.286	0.293	0.007
% low-income students	0.372	0.390	0.018	0.607	0.618	0.011	0.266	0.262	-0.004
% ELL students	0.085	0.086	0.001	0.110	0.113	0.003	0.047	0.045	-0.002
% first-year teachers	0.061	0.059	-0.002	0.065	0.067	0.002	0.077	0.077	0.000
Mean teacher experience	13.60	13.46	-0.14	13.67	13.32	-0.35**	13.39	13.08	-0.31***
Mean performance ^a	-0.121	-0.101	0.020	-0.761	-0.671	0.090	-0.025	0.119	0.144***
Returners who exited urban schools									
% minority students	0.757	0.774	0.017	0.846	0.847	0.001	0.633	0.380	-0.253***
% low-income students	0.701	0.717	0.016	0.785	0.789	0.004	0.562	0.285	-0.277***
% ELL students	0.152	0.151	-0.001	0.131	0.134	0.003	0.106	0.066	-0.040***
% first-year teachers	0.061	0.059	-0.002	0.064	0.066	0.002	0.066	0.079	0.013***
Mean teacher experience	13.47	13.41	-0.06	13.80	13.51	-0.29*	13.68	12.97	-0.71***
Mean performance ^a	-0.843	-0.771	0.072	-1.291	-1.192	0.099	-0.871	0.021	0.892***
Returners who exited rural schools									
% minority students	0.052	0.059	0.007	0.062	0.081	0.019	0.035	0.165	0.130***
% low-income students	0.187	0.196	0.009	0.206	0.240	0.034	0.192	0.265	0.073***
% ELL students	0.003	0.005	0.002	0.006	0.013	0.007	0.002	0.017	0.015***
% first-year teachers	0.072	0.063	-0.009	0.083	0.044	-0.039**	0.088	0.072	-0.016***
Mean teacher experience	13.03	13.24	0.21	12.97	13.16	0.19	12.65	13.52	0.87***
Mean performance ^a	0.389	0.379	-0.010	0.534	0.364	-0.170	0.351	0.197	-0.154*

In general, the results in Table 6 coincide with those reported in Table 5, namely returning teachers on average reentered schools that were very similar in terms of student and teacher

characteristics to those they had left. Former teachers who returned to the same school found no significant differences in the average characteristics of the students and teachers in those schools. The same tended to be true for those who returned to a different school in the same district, with the exception of some small but statistically significant differences in the experience levels of teachers between the exit and return schools. Leavers who returned to a different district experienced more differences, mostly with regard to teacher experience levels and mean student performance. Not surprisingly given the return patterns shown in Figure 3, those who left urban and rural schools and returned to different districts experienced the greatest differences between their exit and return schools. Specifically, urban leavers on average returned to less racially/ethnically diverse, lower poverty, higher performing schools, whereas rural leavers on average returned to somewhat more racially/ethnically diverse, higher poverty, lower performing schools.

Discussion and Implications

The results of this study both confirm and expand what is known about returning teachers, including the factors associated with whether and where former teachers return as well as how such teachers contribute to inequities in the distribution of teachers across schools. Consistent with return figures from earlier studies (Beaudin, 1993; Murnane et al., 1988; Singer, 1993; Stinebrickner, 2002), just under one-third of teachers who left the Illinois public schools between 1987 and 2002 returned by 2006. Moreover, the vast majority of those who returned did so after only a few years away. Together, my results point to a significant rate of temporary attrition from the teaching profession, which has implications both for how policymakers and researchers consider issues regarding teacher supply and attrition as well as for how local administrators might respond to teacher departures. For example, I show that the probability of a teacher returning after an absence of more than five years was extremely low for both female and male leavers. Among those who returned, more than half reentered teaching in a district other than the one they exited. This suggests that districts and schools wanting to attract former teachers back to their classrooms need to target efforts at recent leavers, perhaps by maintaining contact with those teachers or finding a means to keep them informed of opportunities that are available if and when they decide to return.

Consistent with analyses of returning teachers from the 1970s and 1980s (Beaudin, 1993; Grissmer & Kirby, 1992; Heyns, 1988; Kirby et al., 1991; Murnane et al., 1988, 1991; Singer, 1993), the results also show that the personal characteristics and qualifications of recent cohorts of former teachers continue to impact whether they return after a break in service. My ability to examine females and males separately revealed some gender differences, although the differences tended to be greater for job-based factors than personal ones. Overall, females were more likely to return than males during the period of this study, but the difference in return rates was small (1.7 percentage points) and practically insignificant. This gender difference is notably smaller than that reported by Murnane et al. (1991) using earlier cohort data from North Carolina and Michigan. More evidence based on recent data from other states or even the U.S. as a whole would help to determine whether the more limited gender differential among recent Illinois returners reflects a broader shift in reentrants' behaviors. In addition, I find that other personal and background characteristics, including former teachers' race/ethnicity, age at exit, years of experience, degree level, type of certification, and subject specialty, all were associated with the likelihood of their return. Interestingly, my results demonstrate that former teachers' academic aptitude as measured by their ACT composite score also was an important factor but only for females. Specifically, higher-scoring female leavers in this study were less likely to return, whereas lower-scoring female leavers were more likely to return. Murnane et al. (1991) reported a similar result for all leavers. This result

suggests that opportunity costs, which have been found to affect individuals' decisions to enter teaching and to remain in the profession (Ballou, 1996; Hanushek & Pace, 1995; Lankford et al., 2002; Podgursky et al., 2004; Vance & Schlechty, 1982), also play a role at the point of reentry.

As additional evidence of the impact of opportunity costs on returning, I find that both female and male leavers who earned higher teaching salaries at the time of exit were more likely to return both to the profession and to their former school or district than those who earned lower salaries, even after controlling for factors that contribute to salary differentials including degree level, years of experience, and region of the state. This result is consistent with Beaudin's (1993) study of returning teachers. Like the evidence from the teacher recruitment and retention literature (Dolton, 1990; Dolton & Makepeace, 1993; Grissmer & Kirby, 1992; Hanushek et al., 2004; Imazeki, 2005; Kirby et al., 1999; Lankford et al., 2002; Murnane & Olsen, 1989, 1990; Podgursky et al., 2004; Shin & Moon, 2006; Stinebrickner, 1998), this finding provides support for policies that would improve teacher salaries during teachers' early years in the profession when they are most likely to make decisions regarding their careers in teaching.

This study makes an important contribution to this literature by examining the impact on leavers' return decisions of other, non-pecuniary school- and district-based factors, which serve as proxies for conditions in the leavers' positions at the time of exit that may have impacted their views of teaching and, hence, their likelihood of returning. Here, the results reveal interesting gender differences in response to these factors. Specifically, both personal and pecuniary factors in teaching (i.e., teacher salaries) played a greater role than non-pecuniary factors (i.e., school and district characteristics) on male leavers' decisions to return, whereas personal, pecuniary, and non-pecuniary factors all influenced female leavers' decisions. The same was true with regard to factors associated with where former teachers returned — non-pecuniary factors, particularly student characteristics, showed less of an influence on males than on females. These findings add to the growing body of research regarding the impact of working conditions on teachers' labor market decisions (Allensworth et al., 2009; Boyd et al., 2005a; Boyd, Grossman, et al., 2011; Boyd et al., 2009; Hanushek et al., 2004; Ingersoll, 2001; Johnson & Birkeland, 2003; Kukla-Acevedo, 2009; Ladd, 2011; Loeb et al., 2005; Scafidi et al., 2007). More importantly, my results indicate that greater attention needs to be paid to gender differences both by researchers who seek to understand teachers' labor market behaviors and by policymakers and practitioners who design and implement policies to address those behaviors.

Whereas nearly all prior studies focused on whether former teachers returned, I consider both whether and where they return, thereby providing a much needed look at returning teachers' impact on schools and districts. Nearly one-third of leavers from the Illinois public schools returned to the profession, yet less than half of the reentrants overall returned to the school or district that they left. The remaining 52.5% of returning teachers reentered schools in different districts. For some schools and districts, the return rates of their former teachers were substantially lower. Indeed, only 23.3% and 27.7% of leavers from rural schools and town schools, respectively, returned to their exit school or district. The corresponding percentages for Chicago schools and other urban schools, in contrast, were 83.7% and 50.0%, respectively. Thus, contrary to conventional wisdom the loss of teachers to attrition from the profession is more likely to be permanent for smaller schools and districts outside of urban and suburban areas. Given that the temporary loss of teachers is likely to be less costly to schools and districts in terms of their ability to recoup some of their initial investments associated with orientation, induction, and professional development upon former teachers' return, these results suggest that some schools and districts bear greater financial costs when a teacher leaves than others. Assuming that returning teachers also provide human capital benefits relative to inexperienced teachers in terms of their effectiveness in the classroom upon

reentry, these results point to differences across schools and districts in the educational costs associated with teacher attrition as well. Further research is needed to determine the extent to which former teachers' preferences as opposed to the availability of job opportunities in teaching at the desired time of reentry influenced these outcomes.

Teachers in this study who left and later returned were sorted inequitably across schools both at the time of exit and at the time of return much like studies have found for teachers more generally (Betts et al., 2000; Clotfelter et al., 2006; DeAngelis et al., 2005; Goe, 2002; Goldhaber et al., 2007; Knoepfel, 2007; Lankford et al., 2002; Lu et al., 2007; Peske & Haycock, 2006; Wayne, 2002). However, I demonstrate that the returning teachers on average did not exacerbate inequities in the distribution of teachers because they reentered teaching in schools that were similar in terms of student and teacher characteristics to those that they had left. This was especially true of former teachers who returned to the same school or district. Among returning teachers who changed districts upon reentry, overall they entered somewhat higher-performing schools, although this result should be viewed cautiously on account of the limited years of data on which it is based. Teachers who left urban and rural schools and later returned to different districts were most likely to reenter schools with very different characteristics. My results show that nearly two-thirds of teachers who left urban schools and returned to a different district reentered the profession in a suburban school; only 18.5% returned to teaching in urban schools. As a result, those teachers on average sorted into less diverse, more economically advantaged, higher-performing schools. In contrast, 6 out of 10 teachers who left rural schools and returned to a different district reentered the classroom in non-rural schools, which tended to be more diverse, less economically advantaged, and lower performing than the schools they left. It is interesting to note that these sorting results are similar to those reported in an earlier study of Illinois teachers who stayed in the profession but changed schools (DeAngelis & Presley, 2007), although in that study the sorting of those who changed districts was more consistent and pronounced across locale types with all but rural school teachers on average moving to less diverse, higher income, higher-performing schools. Given that returning teachers in this study sorted into the profession in a fashion consistent with entering teachers more generally, these sorting results suggest that returning teachers may make job choices at the reentry point based more on availability than personal preferences. More importantly from a policy perspective, my results provide additional evidence to support Boyd et al.'s (2002) conclusions regarding teacher sorting and indicate that policy efforts aimed at mitigating inequities in the distribution of teachers should be targeted at teachers' initial entry to the profession and the movements of teachers who stay in the profession but change schools.

Like the earlier teacher return studies that also relied on state administrative datasets (Beaudin, 1993, 1995; Grissmer & Kirby, 1992; Kirby et al., 1991; Murnane et al., 1988, 1991; Singer, 1993), this study would have benefitted from more detailed information that is not available in datasets of this type. For example, I am not able in this study to determine why teachers left the profession nor whether their decisions to leave were made voluntarily or involuntarily. Such data would have provided valuable insight with regard to whether and where former teachers returned. Additionally, information about the actual effectiveness of leavers in this study would have enabled me to examine the relative effectiveness of returners compared to non-returners as well as the effectiveness of teachers before and after their break in service. I surmise that returning teachers are likely to be attractive to schools and districts on account of their prior experience in the classroom. However, a few studies have shown that less effective teachers are more likely on average to leave the profession than more effective teachers (Boyd, Grossman, et al., 2009, 2011; Boyd, Lankford, et al., 2011; Goldhaber et al., 2011; Hanushek & Rivkin, 2010), which raises some question about the

effectiveness of those who return. Additional research regarding the effectiveness of returning teachers would provide valuable information about this important source of teacher supply.

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