

IS THE CLOCK STILL TICKING? AN EVALUATION OF THE CONSEQUENCES OF STOPPING THE TENURE CLOCK

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Using a longitudinal administrative data set from a large research university, the authors empirically evaluate the consequences of using stop the clock (STC) policies for the career success of tenure-track faculty. STC policies were introduced approximately 40 years ago, yet surprisingly little has been written about how they affect career outcomes. The prevalence of the ideal worker norm in academia raises the possibility of negative consequences as evaluators may treat STC policy use as a signal that the faculty member lacks sufficient commitment to his or her academic role. Consistent with this possibility, the authors find that faculty members who stop their clock for family reasons incur a salary penalty relative to faculty members who do not stop their clock, which cannot be explained by differences in productivity. Alternatively, faculty members who use the policy are not at a promotion disadvantage as compared with nonusers, and they actually have higher promotion rates.

Stop the clock (STC) policies allow tenure-track faculty members to delay their tenure review, typically in increments of one year, if they experience events that are likely to negatively affect their research productivity. The goal of STC policies is to “level the playing field,” or equalize the opportunity that faculty members who experience these productivity shocks have to demonstrate their scholarly capabilities by the time of their tenure decision, when faculty members are evaluated to determine if they are worthy of lifelong employment. Because the pre-tenure probationary period often coincides with faculty members’ prime childbearing years, a primary reason for eligibility is the birth or adoption of a child. While STC policy eligibility was initially restricted to female faculty members, institutions have

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expanded eligibility to both sexes in the last two decades (Thornton 2008). The increasing involvement of men in caregiving (Bianchi et al. 2000; Gornick and Meyers 2003; Sayer 2005; Bianchi and Milkie 2010) implies that STC policies are potentially beneficial to male and female faculty members alike.

Despite this potential benefit of STC policies, the norm that success in academia requires focused pursuit of academic work at the expense of other responsibilities, including family (Williams 2000; Ward and Wolf-Wendel 2004; Drago et al. 2006), suggests that use of these policies may be detrimental to the career outcomes of tenure-track faculty members. In particular, evaluators may perceive stopping the clock for family reasons as an indicator that the faculty member lacks sufficient commitment to his or her academic role and in turn may restrict the career rewards of policy users. Accordingly, STC policies may have unintended negative consequences for career outcomes, such as salary and promotion, by serving as a tool for making inferences regarding faculty members' commitment.

Given this context, evaluating the career consequences of STC policies is an important endeavor. Although STC policies have existed for approximately 40 years and are currently available at nearly 90% of research institutions (Hollenshead et al. 2005), empirical evidence on how they affect the career success of tenure-track faculty members is surprisingly scarce. We begin filling this gap by evaluating the consequences of stopping the clock for family reasons, which includes birth or adoption of a child as well as other significant caregiving needs, using a longitudinal data set that includes tenure-track faculty members from a large research institution. We contribute to the literature by developing and testing two competing explanations for any career consequences associated with STC policy use. More specifically, we test whether evidence comes to light that evaluators treat STC use as an indicator that the faculty member lacks commitment (*the commitment hypothesis*) by evaluating whether STC policy use incurs negative career consequences. We also collect and incorporate measures of research productivity into the analysis, which allows us to assess the alternative explanation that any career penalty associated with STC use stems from productivity differences between faculty who do and do not stop the clock (*the productivity hypothesis*). Inclusion of productivity data allows us to conduct the most comprehensive evaluation of STC policies to date.

As our primary analysis, we evaluate the consequences of using STC policies for family reasons on annual salary. This indicator of career success is susceptible to subjective influences, such as perceptions of low commitment, due to its low-profile nature (Petersen and Saporta 2004; Castilla and Benard 2010) and the decentralized salary setting process at the institution we study. We estimate the effect of policy use by comparing the change in salary of faculty members following STC policy use for family reasons relative to those who did not use the policy, and thereby control for individual differences between users and nonusers, in addition to controlling for the quantity and quality of the faculty member's publication record. Our ability

to exploit information on the timing of policy use facilitates an evaluation of the consequences of the STC policy that is robust to the concern that our results may be driven by selection into the policy. In addition to salary, we consider the consequences of using the STC policy for promotion outcomes by evaluating the relationship between stopping the clock for family reasons and promotion to a tenured position, controlling for publication records. Given the high-profile nature of the promotion decision as well as the centralized process for tenure review, the perception of low commitment that may be associated with STC use is less likely to influence promotion outcomes.

Our main goal is to assess the impact of STC policies on indicators of career success (i.e., salary and promotion), yet our data set also allows a comparison of the publication records at tenure review of faculty members who did and did not stop the clock. This analysis provides the first empirical insight to date as to whether STC policies provide sufficient opportunity for faculty members who experience productivity shocks to better meet the research expectations for tenure.

Conceptual Framework

At research institutions, the aim of STC policies is to equalize the opportunity faculty members have to meet the research expectations for tenure. A primary motivation for STC policies is that family life events, such as the birth or adoption of a child or the need to care for a sick family member, impose demands on time and energy that may strain the resources a faculty member has available for research. Faculty members who experience significant family-life events may be at a disadvantage at tenure review as compared with individuals who did not experience such events. Consistent with this possibility, several studies have found that the presence of young children has a negative effect on scholarly productivity, at least among female academics (e.g., Kyvik 1990; Long 1990; Stack 2004).

Whether STC policies advance the career success of tenure-track faculty, however, is an open question. Faculty members often fear that stopping the tenure clock for family reasons will lead to negative career consequences (Hollenshead et al. 2005; Ward and Wolf-Wendel 2005; Mason, Goulden, and Wolfinger 2006), but evidence on actual consequences is lacking. The existing work on the relationship between policy use and career outcomes is limited to Manchester, Leslie, and Kramer (2010). This study did find that use of STC for family reasons has a negative effect on salary; however, the cause of this salary effect remains unknown. We contribute to the literature by proposing and evaluating two plausible explanations for why using STC policies for family reasons may have negative effects on career outcomes.

First, we consider the *productivity hypothesis*, which proposes that any negative effect of using STC policies for family reasons can be explained by differences in productivity between users and nonusers and stems from standard economic principles. Drawing from the traditional competitive

paradigm in economics in which salary reflects marginal productivity, if faculty members who use the policy experience a drop in productivity relative to nonusers, then policy use would be associated with a negative effect on salary.¹ In addition, if faculty members who use STC policies for family reasons experience shocks to productivity that cannot be fully compensated for by a one-year delay in tenure review, then policy users would also face lower promotion chances relative to their peers who did not use the policy. Therefore, the productivity hypothesis implies that any negative effect of using STC policies for family reasons on indicators of career success is driven by a reduction in productivity. Accordingly, this hypothesis suggests that policy use will *not* impart a negative effect on career outcomes if productivity differences between users and nonusers are taken into account.

The hesitation of tenure-track faculty members to use STC policies for family reasons, however, suggests that policy use may have detrimental consequences even after accounting for research productivity. Consistent with this possibility, our second explanation, the *commitment hypothesis*, proposes that policy use has negative career consequences because evaluators infer that faculty members who use STC policies for family reasons lack sufficient commitment to their academic role. Unlike the productivity hypothesis, which is based in fundamental economic principles, the commitment hypothesis integrates theory on the ideal worker norm from sociology (Acker 1990; Williams 2000; Ward and Wolf-Wendel 2005; Drago et al. 2006) with signaling theory from economics (Spence 1973).

A faculty member's hesitancy to use STC policies likely stems from a constant pressure to keep family responsibilities from interfering with academic work because academia subscribes to the ideal worker norm (Drago et al. 2006), which dictates that faculty members should have unwavering commitment to their academic roles (Williams 2000; Ward and Wolf-Wendel 2004). The features of academic departments are conducive to the development of such a norm (Landers, Rebitzer, and Taylor 1997). In particular, in academic departments at research institutions, faculty members contribute jointly to the department's ranking and reputation. Holding ability fixed, faculty members who are willing to devote more of their time and energy to research contribute more to the joint production, increasing the caliber and reputation of the department. Academic departments therefore prefer to reward and tenure faculty members who have a greater commitment to their academic role. Given that tenure results in lifelong employment, the stakes are high.

A faculty member's commitment to academic research is known to that individual but is not readily observable by others. Signaling theory posits

¹The productivity hypothesis conceptualizes that any detrimental effect of policy use on career outcomes comes from the productivity shock accompanying the event (e.g., birth) that led to eligibility, rather than the selection of less productive faculty members into policy use. While we do not deny that such selection is possible, we focus on the role of time-varying dimensions of productivity because we can directly address time invariant characteristics in our salary analysis.

that, in the presence of such asymmetric information, parties will use observable characteristics or behaviors to make inferences about unobservable characteristics (Spence 1973). Therefore, tenured members of the department will find ways to identify tenure-track faculty members who are highly committed and flag faculty members who have low commitment. In this context it is not hard to imagine that use of an STC policy to accommodate significant family responsibilities may call into question a faculty member's current and future commitment to research, thereby imparting negative career consequences. Consistent with this possibility, Drago et al. (2006) theorize that faculty members attempt to delay, minimize, or hide their family responsibilities, for example, by not taking advantage of STC policies after the birth of a child, in an effort to avoid negative career consequences that may stem from perceptions that caregivers lack commitment. This mechanism is consistent with recent work by Leslie et al. (2012) conducted outside of academia, which shows that use of flexible work practices for personal-life reasons results in negative career consequences through evaluator perceptions that the employee has low organizational commitment.

Under the commitment hypothesis, use of an STC policy for family reasons provides information over and above what was previously available, implying that negative consequences will be present even after controlling for measured differences in productivity between policy users and nonusers. An empirical test for differentiating the two hypotheses, productivity versus commitment, amounts to evaluating the consequences of using the STC policy for family reasons controlling for measured productivity, which we operationalize using the quantity and quality of faculty members' publications.

Examining whether the effect varies by gender provides a promising additional test of the two competing hypotheses. The main concern for the test we propose above is that there may be differences in productivity between STC policy users and nonusers that are not captured in publication records. While publications are the primary dimension on which tenure-track faculty members at research institutions are evaluated, career outcomes may also be influenced by other measures that are available to evaluators but not to the researchers (e.g., research presentations, professional service, and teaching evaluations). If negative career consequences of using STC policies for family reasons are due to unmeasured aspects of productivity (i.e., the productivity hypothesis holds), then the negative effect of policy use should be larger among female faculty members relative to male faculty members because women are more likely to have primary responsibility for caregiving (Nomaguchi, Milkie, and Bianchi 2005; Drago 2009) and arguably face a greater shock to all aspects of productivity relative to their male counterparts when significant family life events occur.

Alternatively, under the commitment hypothesis, the career consequence of stopping the clock for family reasons should either not differ by gender, given that use of STC policies for family reasons by either gender is likely to be interpreted as a signal of low commitment, or may even be larger for men than for women. Specifically, gender-based social roles cast women as

caregivers who are committed to their personal lives and men as breadwinners who are committed to work (Eagly 1987). Men who stop the clock for family reasons, and thus signal commitment to caregiving, violate traditional social roles and may face particularly severe penalties (cf. Albrecht et al. 1999; Allen and Russell 1999). Therefore, evidence that the negative consequences of STC are greater for women will provide support for the productivity hypothesis, whereas evidence that the consequences do not differ by gender—or are even stronger for men—will provide support for the commitment hypothesis.

A final relevant difference between the two hypotheses is that STC use for family reasons is more likely to have negative consequence for salary outcomes as opposed to promotion outcomes under the commitment hypothesis, but not under the productivity hypothesis. Recent work in the management literature shows that the influence of subjective factors, such as perceived commitment, are less likely to influence career outcomes that are easily detectable, such as promotion, and more likely to influence career outcomes that are harder to monitor, such as annual salary changes (Petersen and Saporta 2004; Ng et al. 2005; Castilla and Benard 2010). The high-profile nature of promotion outcomes in academia imparts higher scrutiny by central administration and greater risk of litigation. This implies that even if department evaluators view use of STC policies for family reasons as a signal that the faculty member lacks sufficient commitment, the threat of litigation or institutional sanction may prevent any negative consequence from being manifest in promotion decisions.

In summary, our primary objective is to evaluate whether any potential negative effect of using STC policies for family reasons on career success is consistent with the possibility that evaluators interpret STC policy use as a signal of low commitment, or can instead be explained by productivity differences between users and nonusers. To the extent that the commitment hypothesis is operating, we furthermore expect that the penalty associated with STC use for family reasons will be either equivalent for both genders or greater for men, and will also be more likely to emerge in the salary analysis than in the promotion analysis.

Aside from examining the career consequences of STC policy use, our data set also affords an investigation of whether STC policies are effective at leveling the playing field at tenure review by providing faculty members who experience significant family life events sufficient time to compensate for lost productivity. Whether the policy is effective is unclear, given that the policy is relatively crude in that it delays tenure review in increments of one year. In particular, an additional year may undercompensate for the productivity shock faculty members experience, leaving faculty members who use the policy at a disadvantage at their tenure review; may be approximately the right adjustment; or may overcompensate and place STC users at an advantage over nonusers. In addition, whether a one-year delay undercompensates, equalizes, or overcompensates may differ by gender. For example, eligibility due to the birth of a child may be more likely to undercompensate

women, as compared to men, due to the physical burdens of childbirth as well as evidence that women typically devote more time to caring for infants (Drago 2009). Therefore, as a secondary goal, we also provide insight into the effectiveness of STC policies by comparing the publication records at tenure review of faculty members who stop their clock relative to those who do not and examining if the effect of STC use on productivity varies by gender.

Institutional Setting and Data

Research Setting

The setting for our analysis is a doctorate-granting institution that is classified as having “very high research activity” (RU/VH) by the Carnegie Classification system. This means that research is of utmost importance in faculty performance evaluations. In the criteria for tenure, candidates must demonstrate research achievements that are the basis for a national or international reputation. Demonstration of teaching effectiveness is secondary and can generally be characterized by the need to meet a given standard, which varies to some extent across academic colleges (e.g., higher standards in professional schools). Achievements in the service domain bear little weight in the tenure decision; neither teaching nor service can make up for deficiencies in research accomplishments.

At this institution, the standard length of the tenure clock is six years, but this time can be extended if the faculty member meets the eligibility conditions for the STC policy. Tenure-track faculty members are eligible to stop the tenure clock for family reasons, including the birth or adoption of a child and caring for an ill family member. Faculty members are also eligible to use the STC policy for non-family reasons, including personal illness, unanticipated research delays (e.g., laboratory explosions, IRB delays), contractual stipulations (e.g., hired without PhD, department restructuring), and taking an unpaid leave of absence (e.g., working for the government or other institution on a special appointment). Because family responsibilities represent a clear challenge to the ideal worker norm, we test the commitment hypothesis by comparing faculty members who use the STC policy for family reasons to nonusers. We control for STC policy use for non-family reasons in the analysis to separate these individuals from nonusers; however, we do not hypothesize about the effect of policy use for non-family reasons on career outcomes due to the variety of reasons for eligibility, many of which are unrelated to the question of faculty commitment.

To use the STC policy, faculty members must complete a written request form that is later signed by their department chair, the dean of their college, and the vice provost. The request must be made within one year of becoming eligible, which helps mitigate negative selection into the policy on productivity that would be present if faculty members could wait until the year prior to their tenure review and then elect to stop their clock if they question whether their publication record meets the expectations for tenure.

The policy provides no accommodations for teaching or service responsibilities for the faculty member; it only stipulates an extension of the tenure clock.

We have argued that the signal of low commitment hypothesis is more likely to operate for salary than for promotion due to the high-profile nature of promotion decisions (cf. Petersen and Saporta 2004; Ng et al. 2005; Castilla and Benard 2010). The institutional features of promotion and salary decisions at this institution further support the commitment hypothesis as more likely to operate in the salary analysis than in the promotion analysis. Namely, promotion decisions at this institution involve a centralized process and multiple sets of evaluators who likely have little information about STC policy use, particularly the underlying reason for why the policy was invoked (family or non-family). In addition, the central administration strongly supports the STC policy. Therefore, inferences of low commitment may in fact take place at the department level but have minimal effect on promotion outcomes. Alternatively, salary decisions at this institution are made at the department level with little institutional oversight. While the centralized administration determines the size of the annual salary pool available to each college, how this is allocated to faculty members in the form of salary increases is up to the departments within the colleges. Except for stipulations on when a faculty member's recurring salary may be decreased, limited oversight on salary setting occurs. In addition, salary decisions are annual and thus closer to when the potential information about commitment would be revealed as compared to the promotion decision, which may take place several years after policy use.

Data on Tenure-Track Faculty

We used various administrative records to construct an original data set that includes five cohorts of tenure-track faculty members hired between 1998 and 2002. For each faculty member, the data set includes age, gender, academic college, annual salary, promotion outcome, and history of STC use, including the year of policy use and the reason for use. The data set includes data for each year a faculty member remained at the institution from the time of hire through 2008, and contains 383 tenure-track faculty members. Of these, 69% were promoted with tenure; conditional on embarking on the tenure review process, 93% were promoted with tenure. The high value of this latter success rate reflects the fact that candidates are rarely put up for promotion without the department's expectation that the candidate will be successful.

We supplement the administrative records with annual data on publication records from publicly available sources. One of the challenges in constructing a measure of research productivity is that disciplines vary in how the type of publication is weighted; books and journal articles may be weighted differently, for example. Based on each faculty member's discipline, we categorized them into groups based on primary modes of evaluation:

articles, books, or performances/exhibitions.² Only publications in a faculty member's primary mode of evaluation were collected.

We used two sources of publication information. For faculty members in book disciplines, we collected publication records from publicly available curriculum vitae (CV; $n = 60$). For those whose primary mode of evaluation is articles, we located publication information by year by accessing the ISI Web of Knowledge database using the Author Finder search tool. To ensure we located the correct publication record, we used the faculty member's CV to verify the exact name or names under which the author publishes.³ The search was further narrowed using information on the institutional affiliation and by using discipline categories ("Web of Science Categories"). Publication records were taken for all years prior to and including 2008.⁴ For the few cases in which we could not locate the individual's record on ISI Web of Knowledge, we extracted publication counts from the faculty member's CV. For each faculty member in the book or article fields, we constructed cumulative publications by aggregating annual publications through year t for each individual for the years 1998 through 2008.⁵ This left us with 334 tenure-track faculty for whom we have a publication count.⁶

We use publication counts as the primary measure of productivity (Bellas and Toutkoushian 1999). In addition, note that evaluating quality of publications as a measure of performance is a complex task that varies greatly within and across disciplines and departments. Because each discipline has idiosyncratic methods of evaluating the quality of a publication, most studies that incorporate a measure of publication quality have minimized the inherent complexity of this measure by focusing on a single discipline, such as economics (e.g., Hamermesh, Johnson, and Weisbrod 1982; McDowell and Kiholm Smith 1992; Moore, Newman, and Turnbull 1998; Baser and Pema 2003), accounting (e.g., Swidler and Goldreyer 1998; Hasselback, Reinstein, and Schwan 2000), or management (Gomez-Mejia and Balkin 1992) or on a small number of departments (e.g., Diamond 1986). Alternatively, studies that assess the publication records of faculty in multiple disciplines have usually resorted to publication counts (e.g., Ginther and Hayes 1999, 2003). Studies that do incorporate measures of quality have used two measures to evaluate the quality of publications: citations count and journal

²Primary mode was determined based on all publicly available curricula vitae for the department and through contacting the department chair. We exclude from the analysis faculty members whose primary mode of evaluation is performances/exhibitions due to difficulty in quantifying these events.

³This process ensures that we have the complete publication history for individuals who experience a name change (e.g., women who change their name with marriage).

⁴Articles published before the author received an undergraduate degree were excluded. Publication titles beginning with "Abstracts" were excluded, and those beginning with "Proceedings" were recorded separately, but ultimately were included in the publication count.

⁵Articles published prior to 1998 were aggregated and included in the year 1998 to match with the administrative records (1998 to 2008).

⁶We were unable to locate the publication records of 23 faculty members in the book and article disciplines. Of those with missing publication data, one had used STC for family reasons and one had used STC for non-family reasons.

quality. We are able to test the sensitivity of our results using these measures of quality for faculty members in article-based fields (268 of the 334 faculty for whom publication records were available). For these analyses, we collected data on citation counts by article and the impact factor of the journal in which the article was published.⁷

One potential concern is that publication type and quantity cannot be equated across disciplines. For the salary analysis, we have multiple years of data per faculty member and can therefore control for individual-level differences across faculty members using fixed effects estimation, which ameliorates the concern that quantities of publications are not comparable across disciplines. This approach is not possible for the promotion and publications at tenure review analyses because these outcomes occur at a single point in time. Instead, we standardize the total number of publications at the time of tenure review using eight discipline areas as defined by Smart and McLaughlin (1978), which stems from combining the following three dimensions of research: 1) applied versus pure; 2) hard versus soft; and 3) life versus non-life. As a result, each faculty member's productivity is compared with the normative publication base rates within his or her disciplinary area. We combined these groupings with information on primary mode of evaluation (books or articles) to create 12 groups and standardized publications at time of tenure review within each group to construct one measure of productivity per faculty member to serve as a control when evaluating promotion outcomes and as the dependent variable when we evaluate publications at tenure review.⁸

Table 1 displays the frequencies of STC policy use in the final sample. Of the 334 faculty members, 51 used the STC policy at least one time and 13 used the STC policy more than once. Approximately half of the users were female faculty members ($n = 27$). Including multiple spells of STC policy use by the same individuals, the STC policy was used 42 times for family reasons and 21 times for non-family reasons. Both male ($n = 17$) and female ($n = 25$) faculty members used the STC policy for family reasons.

Descriptive statistics for the sample are displayed in Table 2. Faculty members who used STC for family and non-family reasons are separately compared with nonusers. Two significant differences between faculty members who used STC for family reasons and nonusers emerged. First, women make up 58% of users, while they constitute just 36% of nonusers. Therefore, female faculty members have a higher rate of STC use for family reasons relative to males. Second, faculty members who used STC for family reasons are

⁷To obtain the impact factors for each journal, we used the ISI Web of Knowledge Journal Citation Reports to collect one-year impact factors using the 2007 database. We selected the year 2007 because this was the first year that both one-year and five-year impact factors were available, although we subsequently used only one-year impact factors as the results were very similar across the two measures. For citations counts, we obtained the total citations for each article as of spring 2011 using the faculty member's record on ISI Web of Knowledge.

⁸We subtract the group mean and divide by the group standard deviation for each of the 12 discipline-based groups.

Table 1. Frequency of STC Policy Use in Sample

Variable	Total	Frequency	
		Males	Females
Never used STC	283	181	102
Used STC	51	24	27
Used 1 time	38	17	21
Used 2 or more times	13	7	6
<i>By reason (includes multiple spells)</i>			
Family reasons	42	17	25
Non-family reasons	21	12	9

less likely than nonusers to have been over age 40 when hired; this empirical fact is not surprising given that the majority of STC policy spells for family reasons were for the birth of a child, which typically occurs at younger ages.

Effect of STC Use on Annual Salary

To differentiate the commitment and productivity hypotheses, we evaluate the effect of using STC for family reasons on annual salary rewards controlling for measured differences in research productivity (i.e., publication record). We model annual salary at time t assuming a standard log-linear specification:

$$(1) \quad \ln \text{Salary}_{it} = \delta_1 \text{STC}_{t-1} + \dots + \delta_4 \text{STC}_{t-4} + \rho_1 \sum_{\tau=1}^t p_{\tau} + \rho_2 \sum_{\tau=1}^t p_{\tau}^2 + Z_{it} \theta + \pi_i + u_{t-1}$$

where STC_{t-j} for $j = \{1, \dots, 4\}$ are a set of indicators for using STC for family reasons in the prior years.⁹ We first model the effect of lagged policy use on salary using a one-year lag because decisions for salaries in year t are made in year $t-1$ at this institution. A test of the commitment hypothesis amounts to testing whether $\delta_1 < 0$. In a second specification we include indicators for policy use that took place up to four years prior because the information revealed through policy use may influence salary decisions for several years. By evaluating the significance of these lagged terms, we can test the persistence of the effect of policy use on salary decisions.¹⁰ For each specification, we estimate a second model that includes an interaction between gender and the policy use indicators to determine if the magnitude of the effect of

⁹In years other than $t-j$, individuals who use the STC policy are treated as nonusers in the estimation. Individuals with undefined lags (such as he or she was not present in that year) are dropped from the analysis.

¹⁰If we find that the coefficients on the latter lagged terms ($t-2$, $t-3$, and $t-4$) are approximately equal to the first lag, then this implies that the salary effect was a one-time, permanent penalty that endures due to the cumulative nature of the salary decision. Alternatively, if we find that the penalty increases over time, this indicates that policy use negatively affects salary decisions for several years, meaning the effect of policy use on salary decisions is persistent.

Table 2. Descriptive Statistics by STC Policy Use

Faculty characteristic	Nonusers		STC family		STC non-family	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Female	0.360	—	0.579**	—	0.389	—
White	0.759	—	0.711	—	0.888	—
Hire age, in years						
<30	0.216	—	0.211	—	0.222	—
30 to 34	0.389	—	0.526	—	0.389	—
35 to 39	0.205	—	0.211	—	0.222	—
40 or over	0.191	—	0.053*	—	0.167	—
Hire year						
1998	0.205	—	0.158	—	0.000*	—
1999	0.198	—	0.237	—	0.222	—
2000	0.251	—	0.263	—	0.167	—
2001	0.198	—	0.132	—	0.278	—
2002	0.148	—	0.211	—	0.333	—
Promoted	0.717	—	0.921***	—	0.722	—
Starting salary	\$49,745	\$13,701	\$49,505	\$15,746	\$55,646*	\$21,334
Publications at promotion	12.667	13.849	10.026	12.549	12.055	17.339
Std. publications at promotion	0.021	0.990	-0.026	0.831	0.293	1.292
Observations	283		38		18	

Notes: Statistical significance is evaluated relative to nonusers; STC family and STC non-family columns include 5 of the same faculty members due to multiple spells of STC use.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

STC policy use for family reasons differs between men and women. We also test the significance of the simple effect of STC use for each gender to determine if any significant results apply to both genders.

We control for publication records by including a quadratic in cumulative publication counts that the faculty member accrued as of time t in Equation (1) (i.e., $\rho_1 \sum_{\tau=1}^t p_{\tau} + \rho_2 \sum_{\tau=1}^t p_{\tau}^2$), which allows the influence of publications on salary to diminish at high levels of accomplishments (Pfeffer and Davis-Blake 1990).¹¹ While our primary specification uses publication counts (quantity), we also test the robustness of the results by including measures of publication quality.

The estimated models include control variables to help isolate the effect of policy use for family reasons on salary. We include an indicator for using the STC policy for non-family reasons in the time-varying covariates Z_{it-1} as well as year of service and calendar year dummies.¹² In addition, we include an indicator for associate professor that equals one in years following successful promotion to account for the salary increase received upon promotion. We also control for time-invariant characteristics, π_i , by estimating Equation (1) using a fixed effects regression. With this technique, we use

¹¹We include publications through time t for salary decisions made at time $t-1$ to capture publications that have been accepted but are not yet in print.

¹²When constructing the *years of service* variable, we adjusted the value if the individual stopped his or her clock such that the value is repeated for the year in which the clock is stopped. The findings are robust to not making this adjustment in *years of service*.

within-person differences to identify the effect of using the STC policy on salary, which removes the effect of any fixed individual characteristics (e.g., gender, caliber of PhD institution, underlying ability) on salary as well as fixed characteristics of the department (e.g., publication norms, importance of external grants, teaching expectations, support for tenure-track faculty). As a result, the estimates are identified from comparing the change in salary of faculty members after using STC for family reasons relative to before use, as compared to the change experienced by those who did not use the policy. Therefore, the results are robust to concerns of nonrandom selection into the policy based on fixed faculty characteristics or department characteristics.

Table 3 reports the results from estimating the effect of using STC for family reasons on salary. In columns 1 and 2, we display the results from using the one-year lag specification, while columns 3 and 4 display the results allowing policy use to affect salary for up to four years. We estimate a negative effect of using the STC policy for family reasons on salary. In the one-year lag specification, faculty members who stop their clock for family reasons experience a 3.1% lower change in salary in the year following policy use relative to nonusers (column 1). We do not find that the estimated effect of policy use differs significantly by gender in the one-year lag specification in that the interaction term between gender and policy use is not statistically or economically significant (column 2; simple effect for males: $\beta = -0.032$, p -value < 0.01 ; for females: $\beta = -0.030$, p -value < 0.01). Evidence of a penalty for both genders is consistent with the notion that use of family-friendly policies is not only a women's issue, but may send a signal of low commitment for men and women alike (Leslie and Manchester 2011).

When we allow the effect of policy use to last for up to four years, we find that the salary penalty persists for multiple periods: the change in salary experienced by faculty members who stop their tenure clock for family reasons is significantly lower than those who do not stop their clock for three years following policy use (Table 3, column 3). The magnitude of the effect is not statistically different across these three lags (F-statistic: 1.46, p -value = 0.23), which indicates a one-time salary penalty that lasts three years.

We find some evidence that the time pattern of the penalty differs by gender (Table 3, column 4). The interaction between use of STC for family reasons and gender was significant in the second lag, and indicates a larger penalty for men than for women. Moreover, for males, the first three lagged terms are significant (simple effect for 1-year lag: $\beta = -0.039$, p -value < 0.05 ; 2-year lag: $\beta = -0.057$, p -value < 0.01 ; 3-year lag: $\beta = -0.035$, p -value < 0.01 ; 4-year lag: $\beta = -0.009$, p -value = 0.45), and the negative effect on salary two years after policy use is significantly greater than the effect present one year after policy use (p -value = 0.03).¹³ This indicates that using STC for family reasons affects salary decisions of men for two years and that the negative

¹³For male faculty members, the three lags are also statistically significantly different from each other at marginal levels (F-statistics = 2.80, p -value = 0.06).

*Table 3. Effect of Using STC Policy on Annual Salary
(Controlling for Publication Counts)*

<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
STC in <i>t</i> -1 (Family)	-0.03072*** (0.00712)	-0.03211*** (0.01088)	-0.02848*** (0.01043)	-0.03921** (0.01524)
STC in <i>t</i> -2 (Family)			-0.03450** (0.01620)	-0.05744*** (0.01882)
STC in <i>t</i> -3 (Family)			-0.02631** (0.01288)	-0.03538*** (0.01341)
STC in <i>t</i> -4 (Family)			-0.0120 (0.00911)	-0.00892 (0.01181)
STC in <i>t</i> -1 (Non-family)	-0.0145 (0.01593)	-0.0009 (0.02244)	0.00097 (0.02322)	0.00585 (0.02761)
STC in <i>t</i> -2 (Non-family)			-0.0062 (0.02766)	-0.01751 (0.05147)
STC in <i>t</i> -3 (Non-family)			0.03557 (0.02484)	0.05216 (0.03233)
STC in <i>t</i> -4 (Non-family)			0.07262** (0.03264)	0.05483*** (0.02012)
STC in <i>t</i> -1 (Family) × Female		0.00216 (0.01340)		0.02085 (0.02365)
STC in <i>t</i> -2 (Family) × Female				0.04274** (0.02146)
STC in <i>t</i> -3 (Family) × Female				0.01753 (0.01799)
STC in <i>t</i> -4 (Family) × Female				-0.00528 (0.01714)
STC in <i>t</i> -1 (Non-family) × Female		-0.0327 (0.02669)		-0.01709 (0.03696)
STC in <i>t</i> -2 (Non-family) × Female				0.00893 (0.05462)
STC in <i>t</i> -3 (Non-family) × Female				-0.0469 (0.03855)
STC in <i>t</i> -4 (Non-family) × Female				0.04766 (0.07258)
Year of service, adjusted	0.01895** (0.00878)	0.01898** (0.00876)	0.0116 (0.01544)	0.01096 (0.01480)
Associate professor	0.04091*** (0.00742)	0.04084*** (0.00742)	0.02394*** (0.00772)	0.02348*** (0.00773)
Publications through <i>t</i>	0.00224** (0.00112)	0.00226** (0.00112)	0.00261* (0.00139)	0.00261* (0.00140)
Publications through <i>t</i> , squared	0.0000 (0.00001)	0.0000 (0.00001)	-0.00002** (0.00001)	-0.00002** (0.00001)
Constant	10.69911*** (0.00739)	10.69908*** (0.00739)	11.04849*** (0.13010)	11.05481*** (0.12479)
R-Squared	0.850	0.850	0.799	0.800
Individuals	331	331	304	304
Observations	2475	2475	1502	1502

Notes: Dependent variable is the natural log of annual salary. All specifications also include calendar year dummy variables.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

effect in the second lag reflects both the negative effect incurred in the first lag as well as an additional penalty. Alternatively, while the estimated effect is uniformly negative for females, none of the coefficients are statistically significant (simple effect for 1-year lag: $\beta = -0.018$, p -value = 0.26; 2-year lag: $\beta = -0.015$, p -value = 0.42; 3-year lag: $\beta = -0.018$, p -value = 0.29; 4-year lag: $\beta = -0.014$, p -value = 0.27). Note that we lose 973 observations when we estimate the model using the four-year lag specification as opposed to the one-year lag specification, because it requires that we have annual data on the faculty member for four years following policy use, which reduces statistical power. This may explain why we find a significant salary effect for women in the one-year lagged specification but not in the four-year lagged specification.

Although it was not the focus of this article, we find no evidence that using the STC policy for non-family reasons has negative consequences for salary. For the most part, policy use for non-family reasons is not significantly related to changes in salary. An exception is that the effect of policy use on changes in salary four years after policy use is positive. The non-family STC use by gender interaction is not significant in any lag, but the significant positive effect in the four-year lag is present for males (simple effect: $\beta = 0.055$, p -value < 0.01) and is not significant for females (simple effect: $\beta = 0.102$, p -value = 0.14). Given the diversity of non-family reasons for STC use, the drivers of the positive effect in the fourth lag is difficult to ascertain.

To address the concern that the results for STC use for family reasons may be explained by the possibility that faculty members who use the policy reduce the quality of their publications relative to nonusers, we repeat the same analysis using two measures of quality: citation counts and journal impact factor. We restrict the analysis to faculty members in article-based disciplines as quality measures are available among only this subset of faculty. In Table 4, we first display the results from using the cumulative publication count measure for the article-based subsample (columns 1 and 2), and then replace this measure with impact-factor weighted publications (columns 3 and 4) and annualized article citations (columns 5 and 6; see Data on Tenure-Track Faculty section for variable definitions). We find a similar pattern of results for the effect of using the STC policy for family reasons on salary in this subsample as seen in the whole sample in that, relative to nonusers, faculty members who stop their clock for family reasons experience significantly lower changes in salary in the year following policy use (Table 4, column 1). In addition, we find evidence that the penalty lasts for multiple years in that the coefficient on using the policy two years prior is also negative and statistically significant (column 2). Comparing the results for publication count (columns 1 and 2) to those when we control for publication quality (columns 3 to 6) among this subsample, we see that the coefficient estimates on policy use are very similar and that conclusions of statistical significance are identical.¹⁴

¹⁴When we control for quality, the findings by gender were similar to those when we controlled for publication quantity (available upon request).

Table 4. Effect of Using STC Policy on Annual Salary
(Controlling for Publication Quality)

Variable	1	2	3	4	5	6
STC in $t-1$ (Family)	-0.0413*** (0.0090)	-0.0361*** (0.0121)	-0.0423*** (0.0090)	-0.0369*** (0.0121)	-0.0425*** (0.0090)	-0.0364*** (0.0120)
STC in $t-2$ (Family)		-0.0437** (0.0195)		-0.0443** (0.0196)		-0.0428** (0.0195)
STC in $t-3$ (Family)		-0.0257 (0.0166)		-0.0263 (0.0165)		-0.0243 (0.0163)
STC in $t-4$ (Family)		-0.0124 (0.0121)		-0.0127 (0.0123)		-0.0124 (0.0122)
STC in $t-1$ (Non-family)	-0.0141 (0.0213)	0.0068 (0.0346)	-0.0139 (0.0216)	0.0078 (0.0350)	-0.0168 (0.0221)	0.0054 (0.0349)
STC in $t-2$ (Non-family)		0.0125 (0.0349)		0.0164 (0.0360)		0.012 (0.0356)
STC in $t-3$ (Non-family)		0.0367 (0.0320)		0.0418 (0.0331)		0.0345 (0.0322)
STC in $t-4$ (Non-family)		0.0282 (0.0187)		0.0322 (0.0203)		0.0239 (0.0170)
Year of service	0.0198* (0.0103)	0.007 (0.0187)	0.0200* (0.0106)	0.0077 (0.0189)	0.0195* (0.0108)	0.0062 (0.0189)
Associate professor	0.0308*** (0.0079)	0.0139 (0.0085)	0.0320*** (0.0081)	0.0144* (0.0086)	0.0335*** (0.0083)	0.0147* (0.0088)
Publications through t	0.0023* (0.0013)	0.0017 (0.0016)				
Publications through t , squared	0.0000 (0.0000)	0.0000 (0.0000)				
1-year impact factor through t			0.0007* -0.0003	0.0007 (0.0005)		
1-year impact factor, squared			0.0000 (0.0000)	-1.47e-06* (0.0000)		
Annualized citations					0.0000 (0.0003)	-0.0001 (0.0003)
Annualized citations, squared					0.0000 (0.0000)	6.8900E-08 (0.0000)
Constant	10.7523*** (0.0078)	10.8830*** (0.0565)	10.7518*** (0.0079)	10.8789*** (0.0586)	10.7603*** (0.0078)	10.8969*** (0.0597)
R-Squared	0.85	0.801	0.851	0.802	0.848	0.801
Individuals	265	242	265	242	265	242
Observations	1948	1170	1948	1170	1948	1170

Notes: Dependent variable is natural log of annual salary in time t . Estimated using OLS with individual-level fixed effects. Impact factor is cumulative impact factor of the journals published in through time t . Standard errors clustered at individual level. Includes controls for calendar year and use of STC for non-family reasons.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In summary, we estimate a negative effect of using the STC policy for family reasons on salary after controlling for publications, which supports the commitment hypothesis and fails to support the productivity hypothesis. The strength of our identification strategy rests in our ability to use information on the timing of when the STC policy was used. In particular, the salary analysis includes individual-level fixed effects, which controls for stable individual differences and identifies the estimates from within-person variation. This addresses the possibility that the results are due to inherent differences

between policy users and nonusers, such as ability, quality of PhD training, or the quality of the match between the faculty member and the department.

One potential concern is that unmeasured, time-varying aspects of productivity that are not captured in publication records, such as other research activity, teaching, or service, are driving the results. The finding that the effect of policy use on salary does not differ by gender in the one-year specification, and evidence that the persistent effect of policy use on salary for men in the four-year specification, indicate that the effect is not likely driven by unmeasured differences in productivity. Because women typically assume primary responsibility for caregiving, female faculty members who use the STC policy for family reasons likely experience a larger shock to all dimensions of productivity. Therefore, we would expect a greater penalty for women if the salary effect were purely driven by unmeasured productivity differences.

Alternatively, evidence of a persistent effect on salary decisions for men is consistent with the commitment hypothesis in that men who use STC policies for family reasons may be viewed as violating traditional gender roles and, therefore, use of the STC policy for family-related reasons may send a stronger signal of low commitment for men as compared to women. Our finding that the salary penalty may be more persistent for male faculty members is consistent with a related literature on parental leaves of absences, in which researchers have found that parental leaves have larger negative consequences for men than for women, which has been interpreted as evidence that the penalty from these career interruptions is not driven solely by reduced productivity (Albrecht et al. 1999; Allen and Russell 1999).

Another explanation for the persistent effect for men (four-year lag results) is that policy use may signal different information to faculty evaluators based on the tenure-track faculty member's gender. Namely, the signal of low commitment may operate for female faculty members, but the penalty for male faculty members may also stem from perceptions that they are abusing the policy. The commitment hypothesis assumes that faculty members, both male and female, use the STC policy for family reasons because they have significant caregiving responsibilities. It is possible, however, that a male faculty member strategically uses the policy following a significant caregiving event to increase their promotion chances but does not actually have increased caregiving responsibilities (or is perceived as not having these responsibilities). Therefore, policy use that is perceived as illegitimate represents an abuse of the policy and violates norms of fairness and procedural justice (Thibaut and Walker 1975), and these perceptions may in turn negatively affect salary rewards. A procedural justice explanation cannot fully account for our results, however, given that this perspective cannot explain the negative impact of using the STC policy for family reasons on women's salaries (one-year lag specification results). Moreover, our focus on the commitment hypothesis as the likely explanation is consistent with prior work, which provides direct evidence that the career penalties associated

with use of other family-friendly policies by both men and women operates through a perceived lack of commitment (Leslie et al. 2012).

One limitation of the analysis is that we are unable to condition on eligibility, meaning that we cannot evaluate the effect of using STC for family reasons among the set of faculty members who were eligible to use the policy. This is potentially problematic in that the salary effect that we are attributing to use of the STC policy for family reasons may actually be due to having a significant caregiving event, such as the birth of a child (i.e., becoming eligible). This possibility is unlikely given that fathers generally receive a pay premium relative to childless men (Hill 1979; Lundberg and Rose 2002; Correll, Benard, and Paik 2007; Gupta, Smith, and Stratton 2007), and we find evidence of a persistent salary penalty for men. Nevertheless, we partially address this by augmenting the data with a proxy for STC eligibility, specifically whether a faculty member utilized the institution's paid parental leave policy or took unpaid leave through the Family Medical Leave Act (FMLA).¹⁵

We evaluate whether the salary results are robust to becoming eligible for family-related STC use by including indicators for parental leave use in Equation (1). If the estimated effect of STC use for family reasons on salary diminishes after including controls for parental leave, then this suggests that our results are likely driven by becoming a parent, rather than by use of the STC policy. Because parental leave policies and the STC policy in this institution are administered through separate offices (Human Resources office and Office of the Provost, respectively) with distinct reporting practices, use of STC and family leave policies is not one-to-one. This enables us to estimate the effect of parental leave on salary separately from the effect of using STC for family reasons. In our sample a total of 11 men and 23 women took paid parental or unpaid family leave, but only 11 of these 34 faculty members also stopped their clock for family reasons.

After including lagged indicators for use of parental leave, we find that the effect of using STC for family reasons is negative and statistically significant in both the one-year (Table 5, column 1) and four-year (Table 5, column 2) lagged specifications. In addition, the coefficients on the lagged values of parental leave are approximately zero. Therefore, these findings suggest that the salary results likely stem from using the STC policy, not from having a significant caregiving event. Accordingly, the finding that the salary penalty is present for using the STC policy for family reasons but not for parental leave suggests that the STC policy sends a stronger signal of competing responsibilities than episodes of leave. A possible explanation for this is that information on parental leave is not included in the materials distributed to faculty evaluators for the annual review of a tenure-track faculty member, while revisions to the tenure clock are included.

¹⁵This includes paid parental leave in which female faculty members have access to six weeks of paid parental leave for the birth of a child, while male faculty members and those who adopt children have access to two weeks of paid leave, as well as unpaid leave through the Family and Medical Leave Act (FMLA).

Table 5. Effect of Using STC Policy and Parental Leave on Annual Salary

<i>Variable</i>	<i>1</i>	<i>2</i>
STC in $t-1$ (Family)	-0.0309*** (0.0072)	-0.0281** (0.0108)
STC in $t-2$ (Family)		-0.0359** (0.0165)
STC in $t-3$ (Family)		-0.0278** (0.0130)
STC in $t-4$ (Family)		-0.0128 (0.0090)
STC in $t-1$ (Non-family)	-0.0147 (0.0159)	0.0014 (0.0234)
STC in $t-2$ (Non-family)		-0.0069 (0.0275)
STC in $t-3$ (Non-family)		0.035 (0.0247)
STC in $t-4$ (Non-family)		0.0737** (0.0327)
Parental leave in $t-1$	-0.0061 (0.0086)	0.0032 (0.0116)
Parental leave in $t-2$		-0.0027 (0.0129)
Parental leave in $t-3$		0.0058 (0.0135)
Parental leave in $t-4$		0.0083 (0.0104)
Publications through t	0.0022** (0.0011)	0.0026* (0.0014)
Publications through t , squared	0.0000 (0.0000)	-0.00002** (0.00001)
Constant	10.6991*** (0.0074)	11.0516*** (0.1303)
R-Squared	0.850	0.799
Individuals	331	304
Observations	2475	1502

Notes: Dependent variable is natural log of annual salary in time t . Estimated using OLS with individual-level fixed effects. Publications are total works in primary medium of evaluation, books or articles, published as of time t . Standard errors clustered at individual level. Includes controls for calendar year and use of STC for non-family reasons.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

STC Policy Use and Promotion

While salary awards are best suited to test the validity of the commitment hypothesis, the goal of STC policies is inextricably tied to the tenure decision. Therefore, conducting a study of the consequences of policy use without considering promotion outcomes would be remiss.

We evaluate the relationship between using STC for family reasons and promotion by estimating the following equation:

$$(2) \quad \text{Pr}(\text{Promotion} = 1) = \delta \text{STC}_i + \alpha q_i + X_i \beta + \varepsilon,$$

where Promotion equals 1 if the individual was promoted and zero otherwise (including if he or she left the university prior to tenure review). The measure STC_i is an indicator for whether the individual ever used STC for family reasons as a tenure-track faculty member at this institution. We are interested in the coefficient δ , controlling for differences in research output using standardized publications, q_i , at time of tenure review.¹⁶ In addition, for faculty members in article-based disciplines, we control for impact-factor weighted publications and total citations, each standardized by eight-discipline categories. The term X_i captures demographic controls, including an indicator variable for female, age when hired, academic college within the university, and an indicator variable for whether the individual used STC for non-family reasons. In a second model, we add an interaction term between the indicator for female and use of the STC policy (one for each reason for use) to evaluate if the effect of using STC for family reasons differs by gender. We estimate Equation (2) using OLS in order to interpret the interaction term between female and use of the STC policy.

Table 6 shows the results from estimating the relationship between using STC for family reasons and promotion, controlling for publication record. We find a positive relationship between using STC for family reasons and promotion chances, controlling for publication counts: relative to those who did not stop their clock, those who used STC for family reasons had a 26% higher chance of promotion (column 1). Moreover, the interaction between gender and use of STC for family reasons is nonsignificant, and the effect of promotion is significant for both genders (column 2; males: $\delta = 0.282$, p -value < 0.05 ; females: $\delta = 0.243$, p -value < 0.05). Second, we incorporate measures of publication quality using impact-factor weighted publications and number of citations using those faculty members with ISI records. We find that the estimated relationship between promotion chances and use of the STC policy for family reasons is positive and significant in the article subsample (Table 6, column 3), and remains significant when we control for journal quantity (Table 6, column 4) and article citations (Table 6, column 5).

The positive effect of STC use for family reasons on promotion is puzzling in light of past research that reported hesitation by tenure-track faculty members to use STC policies (Hollenshead et al. 2005; Drago et al. 2006; Mason et al. 2006; Thornton 2008). At the same time, these results should be interpreted with caution given that we cannot address endogenous selection into the policy. On the one hand, these results may underestimate the effect of policy use for family reasons on promotion if faculty members with a high probability of promotion refrain from stopping their clock because the additional year postpones the salary increase and tenure privilege that accompanies promotion to associate professor. On the other hand, these results may overestimate the effect of policy use if faculty members who use the policy have a higher underlying probability of promotion.

¹⁶These are total publications in six years plus the number of years STC was used after their hire year standardized by discipline and mode of publication.

Table 6. Relationship between STC Use and Promotion

Variable	All		Article sample		
	1	2	3	4	5
Ever used STC (Family)	0.2590*** (0.0756)	0.2817** (0.1133)	0.3031*** (0.0918)	0.3086*** (0.0923)	0.3149*** (0.0915)
Ever used STC (Non-family)	0.004 (0.1051)	-0.0872 (0.1350)	0.0976 (0.1272)	0.0802 (0.1299)	0.0987 (0.1271)
Ever used STC (Family) × Female		-0.0389 (0.1508)			
Ever used STC (Non-family) × Female		0.227 (0.2120)			
Female	-0.0564 (0.0511)	-0.0644 (0.0554)	-0.0508 (0.0588)	-0.0663 (0.0583)	-0.0572 (0.0583)
Start age, in years					
<30	-0.1420* (0.0781)	-0.1398* (0.0785)	-0.1965** (0.0897)	-0.1915** (0.0901)	-0.2002** (0.0898)
31 to 35	0.0106 (0.0691)	0.0133 (0.0693)	-0.0346 (0.0781)	-0.0348 (0.0785)	-0.0401 (0.0782)
36 to 40	-0.0555 (0.0762)	-0.0532 (0.0765)	-0.1508* (0.0864)	-0.1494* (0.0869)	-0.1621* (0.0868)
Ln(Salary) in first year	0.0944 (0.1563)	0.0813 (0.1571)	0.079 (0.1693)	0.1006 (0.1697)	0.083 (0.1691)
Total publications, standardized (std.)	0.0586** (0.0243)	0.0599** (0.0244)	0.0570** (0.0278)		
Quality-weighted publications, std.				0.0386 (0.0287)	
Total citations, std.					0.0580** (0.0277)
Constant	-0.0957 (1.6624)	0.0442 (1.6712)	0.0941 (1.8097)	-0.1329 (1.8144)	0.0449 (1.8076)
R-Squared	0.147	0.151	0.167	0.16	0.168
Individuals	334	334	268	268	268

Notes: Dependent variable is indicator for promotion to associate professor with tenure. Estimated using OLS. Standardized total publications are total publications at time of promotion, standardized by discipline and primary mode of evaluation (12 groups). Includes controls for age when hire, year when hired, and college unit.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

If the effect of the policy on promotion chances is in fact positive, where would a promotion “boost” come from? One possibility is that the high-profile nature of the promotion decision may result in the favorable treatment of tenure candidates who stopped their clock for family reasons due to concerns of legal recourse or institutional sanctions if these candidates are not promoted, particularly given a central administration that strongly supports the STC policy. A second possibility is that use of the STC policy for family reasons leads to a different publication trajectory. While we control for quantity and quality of the faculty member’s publication record at tenure review, use of the STC policy may affect the time path of publications such that faculty members who stop the clock have a greater number of publications in the years just prior to tenure review. An individual with a steeper trajectory leading up to tenure review may be perceived as having

higher future prospects, and thus granted tenure at a higher rate. Alternatively, the extra year afforded by the policy may allow individuals to gain an advantage relative to nonusers in other dimensions of productivity that we do not measure.

STC Policy Use and Publications at Tenure Review

While our primary focus is the consequence of STC policy use for career outcomes, our data set also allows an assessment of whether the policy is effective at providing faculty equal opportunity to demonstrate research productivity at the time of tenure review. We therefore compare the publication records at tenure review of individuals who stopped their clock to those who did not. We construct a measure of publication counts at the time of tenure review by taking each faculty member's total publications at six years after his or her hire year plus the number of years the individual stopped his or her clock (i.e., Actual clock) and standardize this value by discipline area and mode of publication (see Data on Tenure-Track Faculty section). We regress this measure on an indicator for policy use for family reasons, along with individual characteristics including gender, age when hired, hire year, academic unit, and use of the STC policy for non-family reasons, and report these results in Table 7, column 1. Column 2 displays the results when interaction terms between the indicators for gender and policy use (for both reasons) are added to the regression. We repeat the same analysis restricting the sample to faculty in article-based disciplines and using total publications weighted by the journal's one-year impact factor, and report the results in Table 8 to assess differences in the quality of the publication records.

In terms of publication counts, we find that the coefficient on use of STC for family reasons is positive (Table 7, column 1), but not significantly different from zero. The interaction between gender and STC use for family reasons is nonsignificant, and STC use does not have a significant effect on publications for either females or males (column 2, simple effect for females: $\beta = 0.143$, p -value = 0.539; simple effect for males: $\beta = 0.061$, p -value = 0.815). When we use quality-weighted publications, the estimate is also positive but not significant, and does not differ by gender (Table 8, columns 1 and 2).¹⁷

A second way to evaluate the effectiveness of the STC policy is to assess whether the additional year provided the opportunity for faculty members who used STC for family reasons to improve their research records relative

¹⁷We also investigate the relationship between STC policy use for family reasons and citations at tenure review. The results are analogous to those for quality-weighted publications (available upon request). Note that we find that the coefficient on the indicator for female is negative and significant in Table 7, column 2 and indicates that the publication quantities of female faculty members are 0.40 standard deviations lower than that of male faculty members. Interestingly, the magnitude of the difference is cut in half when we measure quality-weighted publications at tenure review and the coefficient on the indicator for female is no longer statistically significant (Table 8, column 2). This finding suggests that while female faculty members have fewer publications, they are of higher-quality publications, which is consistent with earlier findings in academia (Persell 1983).

Table 7. STC Policy Use and Publication Count at End of Tenure Clock

Variable	Actual clock		Fixed clock	
	1	2	3	4
Ever used STC (Family)	0.1090 (0.1743)	0.0614 (0.2618)	-0.1469 (0.1734)	-0.3293 (0.2598)
Ever used STC (Non-family)	0.4097* (0.2417)	0.5712* (0.3104)	0.2044 (0.2403)	0.4342 (0.3081)
Ever used STC (Family) × Female		0.0814 (0.3483)		0.3213 (0.3458)
Ever used STC (Non-family) × Female		-0.4026 (0.4894)		-0.5489 (0.4857)
Female	-0.4018*** (0.1158)	-0.3883*** (0.1262)	-0.3885*** (0.1152)	-0.3965*** (0.1252)
Start age, in years				
<30	-0.0028 (0.1804)	-0.0062 (0.1813)	-0.0114 (0.1794)	-0.0084 (0.1800)
31 to 35	-0.0826 (0.1595)	-0.0873 (0.1600)	-0.1206 (0.1587)	-0.1288 (0.1588)
36 to 40	-0.0035 (0.1759)	-0.0071 (0.1768)	0.0106 (0.1750)	0.0129 (0.1755)
Ln(Salary) in first year	0.1857 (0.3606)	0.2093 (0.3628)	0.2953 (0.3587)	0.3402 (0.3602)
Constant	-1.8063 (3.8369)	-2.058 (3.8598)	-2.9504 (3.8159)	-3.419 (3.8312)
R-Squared	0.085	0.087	0.092	0.098
N	334	334	334	334

Notes: Dependent variable is standardized number of publications where values are standardized within 8 discipline areas and by mode of publication (12 groups). Actual clock is based on total publications 6 years after hire plus the number of times the clock was stopped, while Fixed clock evaluates publications after 6 years from hire year.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

to those who did not use the policy. To assess the change, we compare the publication record that faculty members had at their actual tenure review to what they would have had if they did not stop their clock (publication records six years after their hire year, or Fixed clock). We standardized publication counts under this fixed clock and regressed it on an indicator for STC policy use for family reasons, along with other individual characteristics. The results for publication count are shown in Table 7, columns 3 and 4, and the results for quality-weighted publications are reported in Table 8, columns 3 and 4.

To test whether the publication record improved, we evaluate whether the coefficient on STC use for family reasons is significantly greater under the actual clock (column 1) specification relative to the fixed clock (column 3). For publication count, the difference in the coefficient across the two equations is significant at the 1% level, which indicates that the extra year was effective at enabling faculty members who stopped their clock for family reasons to significantly improve their publication record relative to nonusers (chi-square = 9.46, p -value < 0.01). Furthermore, the gender by STC use for family reasons interaction is not significant, and the improvement occurred for both genders (females: chi-square = 9.42, p -value < 0.01; males:

Table 8. STC Policy Use and Quality-Weighted Publications at End of Tenure Clock

Variable	Actual clock		Fixed clock	
	1	2	3	4
Ever used STC (Family)	0.2627 (0.2024)	0.439 (0.2966)	0.0994 (0.2040)	0.2355 (0.2995)
Ever used STC (Non-family)	0.8703*** (0.2806)	1.0446*** (0.3392)	0.7955*** (0.2828)	0.9309*** (0.3425)
Ever used STC (Family) × Female		-0.3506 (0.4074)		-0.2707 (0.4114)
Ever used STC (Non-family) × Female		-0.6715 (0.5937)		-0.521 (0.5995)
Female	-0.2055 (0.1276)	-0.1326 (0.1374)	-0.2054 (0.1286)	-0.1491 (0.1387)
Start age, in years				
<30	0.0583 (0.1983)	0.0344 (0.1992)	0.0477 (0.1998)	0.0292 (0.2012)
31 to 35	0.0582 (0.1727)	0.0527 (0.1727)	0.0458 (0.1741)	0.0415 (0.1744)
36 to 40	0.1764 (0.1909)	0.1548 (0.1914)	0.1768 (0.1924)	0.1601 (0.1933)
Ln(Wage) in first year	0.0035 (0.3735)	0.0207 (0.3755)	0.0195 (0.3765)	0.0329 (0.3792)
Constant	-0.3828 (3.9930)	-0.5977 (4.0127)	-0.5175 (4.0245)	-0.6848 (4.0520)
R-Squared	0.151	0.159	0.138	0.142
N	268	268	268	268

Notes: Dependent variable is cumulative publications weighted by the one-year impact factors of the journal, standardized within 8 discipline areas. Sample is restricted to faculty in article-based disciplines. Actual clock is based on total publications 6 years after hire plus the number of times the clock was stopped, while Fixed clock evaluates publications after 6 years from hire year. Sample restricted to faculty in article-based disciplines.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

chi-square = 4.81, p -value = 0.02). The results for quality-weighted publications are similar. We find that the extra year significantly improved the relative quality of publication records of faculty who used STC for family reasons as compared with nonusers (chi-square = 13.84, p -value = 0.0002), and the improvement occurred for both genders (females: chi-square = 7.38, p -value < 0.01; males: chi-square = 9.31, p -value < 0.01). Therefore, these results indicate that the STC policy helped equalize the opportunity for those who experienced family-related productivity shocks to demonstrate their research productivity.

The results from these two analyses suggest that the STC policy for family reasons adequately compensates, or at least does not undercompensate, for lost time. Namely, we find that the publication records at tenure review of faculty members who stop their clock are similar to nonusers and that the extra year enables faculty members who used the policy to significantly improve their record. Drawing definitive conclusions from the comparison of the publication records of policy users and nonusers at tenure review (i.e.,

the first test) is difficult because we are not addressing selection into the policy. In particular, we could be underestimating the effect of the policy if negative selection into the policy comes into play, that is, if faculty with lower productivity are more likely to use the policy; or, we could be overestimating the effect if positive selection occurs. This issue of endogenous selection based on level of productivity is not a concern when evaluating the change in publications (i.e., the second test).

Interestingly, we find that faculty members who use the STC policy for non-family reasons have significantly higher quantity (Table 7, column 1) and quality (Table 8, column 1) of publications at tenure review relative to nonusers. The gender interaction is not significant for either analysis (Tables 7 and 8, column 2), although the simple effects are significant for men (quantity simple effect: $\beta = 0.571$, p -value = 0.07; quality simple effect: $\beta = 1.045$, p -value < 0.01) but not for women (quantity: $\beta = 0.168$, p -value = 0.53; quality: $\beta = 0.373$, p -value = 0.45). It is possible that the better publication record at tenure review of male faculty members who use the STC policy for non-family reasons relative to nonusers may be due to the policy overcompensating these faculty members for lost time if the productivity shock they experience is less extensive. Alternatively, the positive relationship between using the STC policy for non-family reasons and publication record at tenure review for males may be driven by positive selection into the policy. In terms of the change in publication count, faculty members who used the STC policy for non-family reasons showed a significant improvement relative to nonusers (Table 6, column 1 compared with 3; chi-square = 6.36, p -value = 0.012). However, we find no evidence of a significant improvement when quality-weighted publications are used to measure publication records (Table 8, column 1 compared with 3; chi-square = 1.99; p -value = 0.158).

Conclusion

The primary goal of this paper was to evaluate if stopping the clock for family reasons impacts faculty members' career success, and specifically their salary trajectory. We find that using the STC policy has negative consequences for salary: faculty members of both genders who use the STC policy for family reasons incur a salary penalty following use that cannot be explained by a change in quantity or quality of publications (one-year lag specification). The salary penalty is consistent with our commitment hypothesis—that evaluators treat use of STC policies for family reasons as a negative signal regarding a faculty member's underlying commitment to academic work—and thus suggests that salary decisions are affected by subjective factors. Therefore, our findings contribute to the existing literature on ways evaluators extract information about workers in the presence of asymmetric information in the workplace (Landers, Rebitzer, and Taylor 1996; Ichino and Moretti 2009). Furthermore, we find evidence that policy use has a persistent effect on salary decisions for male faculty members

(four-year lag specification), which is consistent with the possibility that men are penalized for using STC for family reasons to a greater extent than women are because use violates traditional gender roles.

We also examined the consequence of using the STC for family reasons on promotion outcomes, but expected the commitment hypothesis would be less likely to receive support due to the high-profile nature of promotion decisions. We estimate a positive relationship between promotion chances and use of the STC policy for family reasons. We provide two possible explanations for preferential treatment of policy users in promotion, including fear of legal recourse if promotion is denied and favorable evaluation due to a steeper publication trajectory leading up to tenure review. The one-time nature of the decision, however, limits the conclusions we can draw about the consequences of policy use on promotion in this context because we cannot address endogenous selection into the policy.

As a secondary goal, we also evaluated the effectiveness of STC policies at equalizing the opportunity of those who experience family-related productivity shocks to meet the research expectations at tenure review. First, we find no difference in the publication records at tenure review of faculty members who used the STC policy for family reasons and nonusers. Second, we find that the extra year afforded by the STC policy helps faculty members who used the policy to narrow the gap between themselves and those who did not use the policy. We therefore provide suggestive evidence that use of STC policies for family reasons is effective and does not systematically over- or undercompensate faculty for the shock to research productivity associated with significant family life events.

The findings of this article should be interpreted with care due to the limitations of the analyses. First, the sample of tenure-track faculty members are employed at a single institution, which implies that the findings may not hold outside of this institution. While the institution is a large research-intensive university, which is where STC policies are commonly found, the findings may be specific to the policies or culture of the institution. Second, the analysis of outcomes at tenure review, namely promotion chances and publications, do not address possible selection into the policy due to the one-time nature of the tenure decision. While exploiting an exogenous change in the probability of policy use would enable more robust evaluation of these outcomes, this is not possible in our context. Third, our data contains information on use of the STC policy, not eligibility, and therefore our results may be driven by the conditions that led to eligibility rather than policy use; however, our results are robust to including a proxy for eligibility. Fourth, rewards for faculty members that are administered at the department level extend beyond salary and likely include travel funds, research funds, summer support, and office space, among others. Differential treatment between faculty members who stopped their clock and those who did not may manifest in the allocation of such perks and therefore, it is possible that we underestimate the penalty incurred by using the STC policy; future work should examine this possibility. Fifth, with a larger sample size our

nonsignificant results could possibly become significant. Hence, future work may want to investigate whether our nonsignificant results remain in a larger sample.

Finally, while the salary analysis controls for quantity and quality of publications, it does not control for all aspects of productivity, such as teaching and service. An explicit channel through which policy use would affect teaching or service does not exist because the STC policy has no stipulations for these responsibilities. Nonetheless, performance in these roles is possibly affected by caregiving demands. However, the fact that we find that males and females experience the same salary penalty in the year following policy use, and that the penalty is persistent for males, makes it unlikely that the salary effect stems from changes in teaching or service performance. With these findings, we can rule out the possibility that the salary penalty is stronger for women. This provides further evidence that differences in productivity, such as those not captured in publication records, cannot explain the salary penalty because women are likely to face a greater shock to all aspects of productivity with the birth of a child, as compared to men. Nevertheless, we cannot completely rule out the possibility that salary penalty stems from changes in unobservable dimensions of productivity.

We find evidence that use of STC policies for family reasons have a negative consequence for salary, one indicator of faculty career success, a finding that indicates that policy use opens the door for subjectivity in salary setting. In terms of implications for universities, our findings suggest that efforts to enhance the objectivity of salary setting by increasing oversight or limiting local autonomy in salary setting may ameliorate the wage penalty experienced by policy users. Alternatively, institutions may be able to reduce the ability of faculty evaluators to draw inferences about tenure-track faculty members based on policy use by bolstering take-up rates for STC policies by reducing enrollment barriers, such as by changing it from an opt-in to an opt-out policy. Our findings also have implications for the future of work-family policies in academia more broadly. To the extent that use of family-friendly policies is perceived as a deviation from a norm, penalties are likely to follow. As long as the ideal worker norm prevails, bias-avoidance strategies surrounding caregiving responsibilities will likely continue to prevent work-family policies from becoming widely used in academia.

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