

Stop the Clock Policies and Career Success in Academia

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In academia, men have historically had more successful careers than women. As compared to male academics, female academics earn lower salaries, are less likely to become associate or full professors, and are less likely to be employed by prestigious institutions (Laura W. Perna 2005). One potential explanation for the gender gap in academia is that the “make or break” pretenure years often coincide with prime childbearing years. Faculty members may therefore accept jobs at less demanding institutions or step out of academia altogether, in order to start a family. The overlap between the biological and tenure clocks is likely a larger career impediment for female faculty than for male faculty, and therefore a contributing factor to the academic gender gap, given that mothers spend considerably more time on child care than fathers (Robert Drago 2009).

To combat the gender gap in academia and help faculty members balance career and family, universities began to offer policies that allow pretenure faculty to delay their promotion review—or stop the tenure clock—under certain circumstances. The first stop the clock (STC) policy was introduced in 1971 at Stanford University and was available to female faculty members who gave birth during their pretenure years. STC policies have increased in prevalence over time: 43 percent of all institutions and 86 percent of research institutions now offer these policies (Carol S. Hollenshead, Beth Sullivan, Gilian C. Smith, Louise August, and Susan Hamilton 2005). Moreover, the breadth of STC policies has expanded since they were first introduced. Many institutions now offer STC policies to all faculty members, regardless of gender, and allow faculty to stop the tenure

clock for a variety of reasons, including the birth or adoption of a child, caring for an ill relative, personal illness, and unforeseen research delays, such as Institutional Review Board (IRB) delays or the destruction of laboratory materials.

STC policies have existed for almost 40 years, yet surprisingly little is known regarding how these policies affect the career outcomes of those who use them. The lack of empirical research on STC use and career success is problematic, given competing rationales for how STC policies might affect outcomes. On the one hand, STC policies may indeed help pretenure faculty who are also parents balance work and family by providing the extra time needed to meet promotion criteria. On the other hand, related literatures in both economics and psychology suggest that the career consequences of an employee’s decision to use family-friendly policies are negative, not positive. For example, research finds that employees who take parental leave receive fewer career rewards, including promotions and pay increases, as compared to those who do not take leave or take leave for nonfamily reasons (James W. Albrecht, Pers-Anders Edin, Marianne Sundstrom, and Susan Vroman 1999; Tammy D. Allen and Joyce E. A. Russell 1999). Evidence that use of family-friendly policies results in career penalties is also consistent with reports that faculty members are often hesitant to use STC policies, even when eligible to do so (Mary Ann Mason, Marc Goulden, and Nicholas H. Wolfinger 2006).

In the present research, we provide one of the first empirical analyses of the relationship between faculty members’ use of STC policies and career rewards, specifically promotion and pay. Although originally aimed at women who give birth during their pretenure years, STC policies are now available to both male and female faculty and can be used for a variety of family and nonfamily reasons. We therefore explore if outcomes of stopping the tenure clock vary by the gender of the user or the reason for use. We find that use of STC policies by pretenure

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faculty is not significantly related to their probability of promotion to a tenured position; however, STC use constrains pay for both male and female faculty. Moreover, we find that the pay penalty associated with stopping the tenure clock is larger and more persistent for faculty members who stop the clock for family reasons, as compared to nonfamily reasons. We discuss different mechanisms that may explain the observed relationships between STC use and faculty rewards and describe our ongoing efforts to isolate which of these mechanisms is at work.

I. Data

We used various administrative records to construct an original dataset that includes all tenure-track faculty members hired between 1998 and 2002 at a large research institution. For each faculty member, the dataset 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 dataset includes data for each year a faculty member remained at the institution from the time of hire through 2008. At this institution, faculty can stop the tenure clock for family reasons, including the birth or adoption of a child and caring for an ill family member, or nonfamily reasons, including personal illness, unanticipated research delays (e.g., laboratory explosions, IRB delays), contractual stipulations (e.g., hired without PhD), and taking a leave of absence.

The dataset includes 383 faculty, 53 of whom used the STC policy at least once during their pretenure years (16 faculty used the policy more than once). Based on first use, 35 faculty used the policy for family reasons, and 18 faculty used the policy for nonfamily reasons. We examined the determinants of STC use and found that women are 9.6 percentage points more likely to use the policy than men (p -value = 0.040) and that faculty who were over age 40 when hired are 8.6 percentage points less likely to use the policy than younger faculty (p -value = 0.089). Both gender and age are significant determinants of STC use for family reasons, but not for nonfamily reasons. STC use rates also vary by college affiliation within the university. We therefore control for age, gender, and college in the subsequent analyses.

II. Empirical Analysis

We examine how STC use relates to promotion and salary outcomes. To provide insight into the potential mechanism through which STC use may affect faculty rewards, we also investigate if the relationships vary by faculty gender or reason for use (i.e., family versus nonfamily). We find that the impact of STC use on rewards, including both promotion and pay, does not differ by gender but does differ by reason for use. We therefore report results separated by reason for use but not separated by gender, due to space constraints. (Results are available upon request.)

Table 1 shows the effect of STC use on the probability of promotion to a tenured position, estimated using a probit model. The estimates reported in column 1 show a significant positive effect of STC use for family reasons on the probability of promotion, but no significant effect of STC use for nonfamily reasons. The positive estimate for family-related use, however, reflects an inextricable link between continued employment, policy use, and likelihood of receiving tenure. The longer a faculty member remains at the institution, the more likely the faculty member is to stop the clock, particularly for family reasons, and the more likely the faculty member is to receive tenure; the unconditional rate of promotion was 69 percent among all faculty, but 92 percent among faculty who survived until their decision year. Thus, this estimate is likely biased upwards because the probability of both STC use and promotion increases with years of service at the institution. As such, we examine the predicted effect of STC use on promotion while varying the sample from those who survive at least one year (column 1) to those who survive to their decision year (column 4). When we restricted the sample to those who remain through their decision year, family related STC use has no effect on promotion. Alternatively, the relationship between STC use for nonfamily reasons and promotion is negative and economically meaningful, although not statistically significant.

These results suggest that STC policy use does not significantly hinder faculty members' promotion outcomes, regardless of reasons for use. Thus, the policy may achieve its intended goal, to the extent that STC use provides faculty the extra time needed to meet promotion criteria. Yet it is important to examine how policy use

TABLE 1—EFFECT OF STC USE ON PROMOTION (BY REASON)

	Unrestricted (1)	At least three years (2)	At least five years (3)	Went up (4)
Used STC (family)	0.220*** (0.062)	0.161*** (0.061)	0.052 (0.063)	−0.004 (0.057)
Used STC (nonfamily)	−0.071 (0.152)	−0.125 (0.152)	−0.208 (0.151)	−0.147 (0.156)
Female	−0.059 (0.054)	−0.048 (0.053)	−0.012 (0.046)	−0.020 (0.035)
Ln (wage) in first year	0.278* (0.159)	0.293* (0.164)	0.123 (0.138)	−0.081 (0.107)
Log-likelihood	−211.174	−178.657	−126.438	−70.086
Observations	372	347	308	265

Notes: Probit model with marginal effects reported; standard errors in parentheses. Includes controls for age when hired, year hired, and college affiliation controls. Nine faculty members were excluded because their promotion outcome has not yet been decided.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

relates to another key measure of career success, namely pay. For the salary analysis, we model how policy use in prior periods, $t - 1$ to $t - 4$, relates to salary in period t and allow the predicted effect to differ by reason for use:

$$\begin{aligned}
 (1) \quad \ln(\text{Salary}_{it}) &= \mathbf{X}_{it}\beta + \mathbf{STC}_{i,t-1,r}\gamma_{r,1} \\
 &+ \mathbf{STC}_{i,t-2,r}\gamma_{r,2} + \dots \\
 &+ \mathbf{STC}_{i,t-4,r}\gamma_{r,4} + \eta_i \\
 &+ \varepsilon_{i,t}
 \end{aligned}$$

where $r = \{n, f\}$ represents nonfamily reasons (n) and family reasons (f) and $\mathbf{X}_{i,t}$ includes controls for gender, age when hired, years of service, position (untentured or tenure), academic college, and year. The specification includes an individual time-invariant effect, η_i , and we estimate the effect of STC use on subsequent wages using fixed effects estimation. We also estimate equation (1) not allowing for η_i using OLS to provide insight into the role of selection into the policy through comparison of the two sets of estimates.

The fixed effects results shown in column 1 of Table 2 show a persistent negative effect of policy use on wages for those who use the STC policy for family reasons: wages of these faculty are approximately 2.3 percentage points lower in the year following use, 4.1 percentage points lower two years after use, and 3.1 percentage points lower three years after use, relative to those who did not use the policy. Four years after

use, the negative effect dissipates to 1.8 percentage points but remains significantly different from zero. The magnitude of this wage effect is economically meaningful and is comparable to the wage increase following promotion to a tenured position. This salary differential is particularly large given the restrictions on annual wage increases imposed by this institution, which have produced wage compression. For those who used the STC policy for nonfamily reasons, the fixed effects estimation shows no significant wage penalty, and we reject the null hypothesis that the penalty is the same by reason for use at the five percent level. By comparing the fixed effects estimates to the OLS estimates (column 2), we can conclude that part of the negative wage effect for family reasons estimated using OLS is attributable to selection (i.e., overall, users have lower wages than nonusers).

III. Discussion

In summary, we find that STC policy use by pretenure faculty is not significantly related to their probability of promotion, but that STC policy use for family reasons constrains pay for both male and female faculty. One interpretation of these results is that STC policies accomplish their intended goal. STC policies were introduced to offset reductions in productivity stemming from personal events or unexpected research delays. If wages reflect marginal productivity, a standard assumption in economics, then the salary results associated with stopping the clock for family reasons could document a

TABLE 2—EFFECT OF CLOCK STOPPAGE ON ANNUAL WAGES (*by reason*)

	Fixed effects		OLS	
	(1)		(2)	
Used STC in $t - 1$ (family)	-0.023*	(0.006)	-0.037	(0.024)
Used STC in $t - 2$ (family)	-0.041***	(0.011)	-0.053**	(0.011)
Used STC in $t - 3$ (family)	-0.031***	(0.010)	-0.063***	(0.010)
Used STC in $t - 4$ (family)	-0.018*	(0.009)	-0.050**	(0.009)
Used STC in $t - 1$ (non-family)	-0.009	(0.018)	-0.102***	(0.018)
Used STC in $t - 2$ (non-family)	-0.021	(0.021)	-0.075**	(0.021)
Used STC in $t - 3$ (non-family)	0.024	(0.026)	-0.007	(0.026)
Used STC in $t - 4$ (non-family)	0.063*	(0.033)	0.034	(0.033)
Female			-0.028	(0.018)
Constant	11.368***	11.368***	10.907***	(0.087)
R^2	0.794		0.649	
Observations	1,657		1,657	
Individuals	340			

Notes: Robust standard errors clustered at the individual level in parentheses. Regressions include age when hired, year hired, years of service, position, college affiliation controls, and year dummies.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

decrease in productivity. The nonsignificant promotion results, if taken as unbiased estimates, then suggest that the extra time STC policies provide helps to counteract this productivity shock, thereby “evening the playing field” in promotion evaluations.

This interpretation allows us to sidestep the issue of directly controlling for time-varying productivity by assuming that wages capture these changes. Yet this assumption is tenuous, for two reasons. First, if we assume that wages reflect productivity alone, our results imply that faculty who stop their clock for nonfamily reasons do not experience a productivity drop because the fixed effects estimates do not indicate a wage penalty for nonfamily STC use. Over half of the nonfamily STC users (14 out of 26), however, used for reasons that would likely produce productivity shocks (e.g., personal illness, research delays). Second, given that women spend more time on family responsibilities than men, we would expect women who use STC for family reasons to experience a greater hit to productivity. Yet we find a persistent negative effect of family-related STC use on the subsequent wages of both men and women.

An alternative explanation is that the persistent negative effect for family related STC use reflects bias in salary evaluation. Research in economics and psychology suggests that use of family-friendly policies may induce bias in the allocation of rewards. Carol L. Colbeck and Robert Drago (2005) argue that faculty are under constant pressure to separate work and family in order to meet the ideal worker norm of uncompromising dedication to one’s job. Analogous to parental leave-taking (Albrecht et al. 1999), family-related STC use may send a signal of low work commitment. Thus, the persistent negative effect of family related STC use on salary may reflect perceptions that faculty members who use this policy lack commitment to their jobs. This rationale also may explain why we find a pay penalty for both men and women who use STC for family reasons; men’s investment in family violates traditional gender roles and thus incurs a penalty that is as large as or larger than that incurred by women (Allen and Russell 1999). Alternatively, the wage penalty may reflect other forms of bias, such as coworker perceptions that STC use is unjustified or unfair, which may be most salient for family related STC use.

One limitation of the present work is our inability to address endogeneity surrounding STC policy use. Conditional on eligibility, an individual's decision to use the policy may be affected by his or her probability of promotion. For example, STC use is likely low among individuals with a high promotion probability because use would only impose a cost by delaying the salary increase associated with promotion. Including objective measures of productivity would allow us to examine selection into the policy and provide further insight into how one's reason for STC use relates to one's productivity. We are in the process of gathering objective productivity data for the faculty in this sample and will be able to provide further insight into the effectiveness of STC policies by controlling for faculty productivity in future work.

IV. Conclusion

STC policies were originally intended to attract women to academia, to create equity, and to improve work-life balance. Despite the widespread availability of STC policies, little is known about their effectiveness. To our knowledge, this is the first empirical investigation of the effect of STC use on promotion and wages. We find an insignificant relationship between STC use and promotion probability, yet we also find a significant, persistent wage penalty associated with STC use for family reasons, but not for nonfamily reasons. One interpretation of these results is that STC policies accomplish their intended goal. However, the differential effect of STC use by reason for use suggests an alternate explanation—that this policy may introduce bias into salary allocations. We also find that women are more likely than men to use STC for family reasons, an action associated

with lower pay. Thus, STC policies may exacerbate, rather than alleviate, the gender pay gap in academia.

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