

*Western
Washington
University*

October 2006

compression presentation

*by Lois
Haignere*

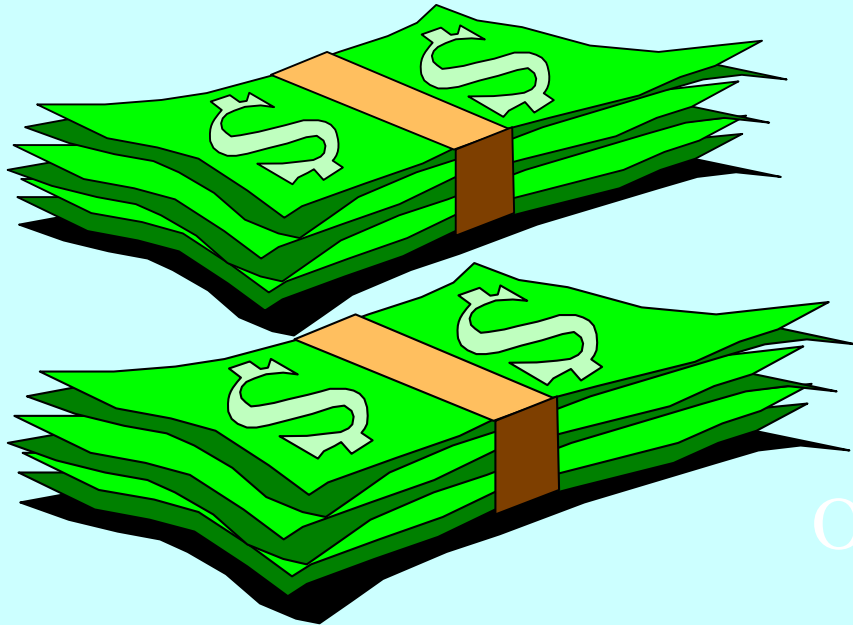
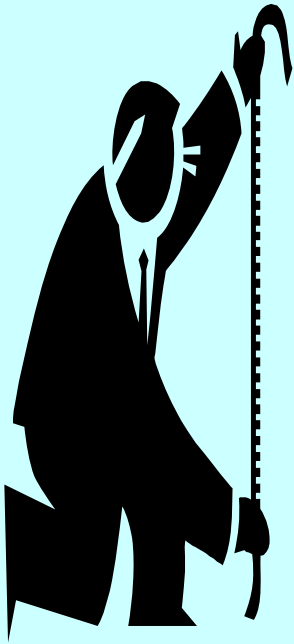


Western Washington University

Reports prepared for Western
Washington University:

1. 2005 Tenure Track Faculty
Race and Gender Study
(July 2006)
2. 2005 Limited Term Faculty
Race and Gender Study
(September 2006)
3. 2005 Compression
Presentation
(October 2006)

The question of compression



New hires

Old hires

Salary compression has been defined as experienced employees having earnings that (relative to new hires) do not reflect their years of service.

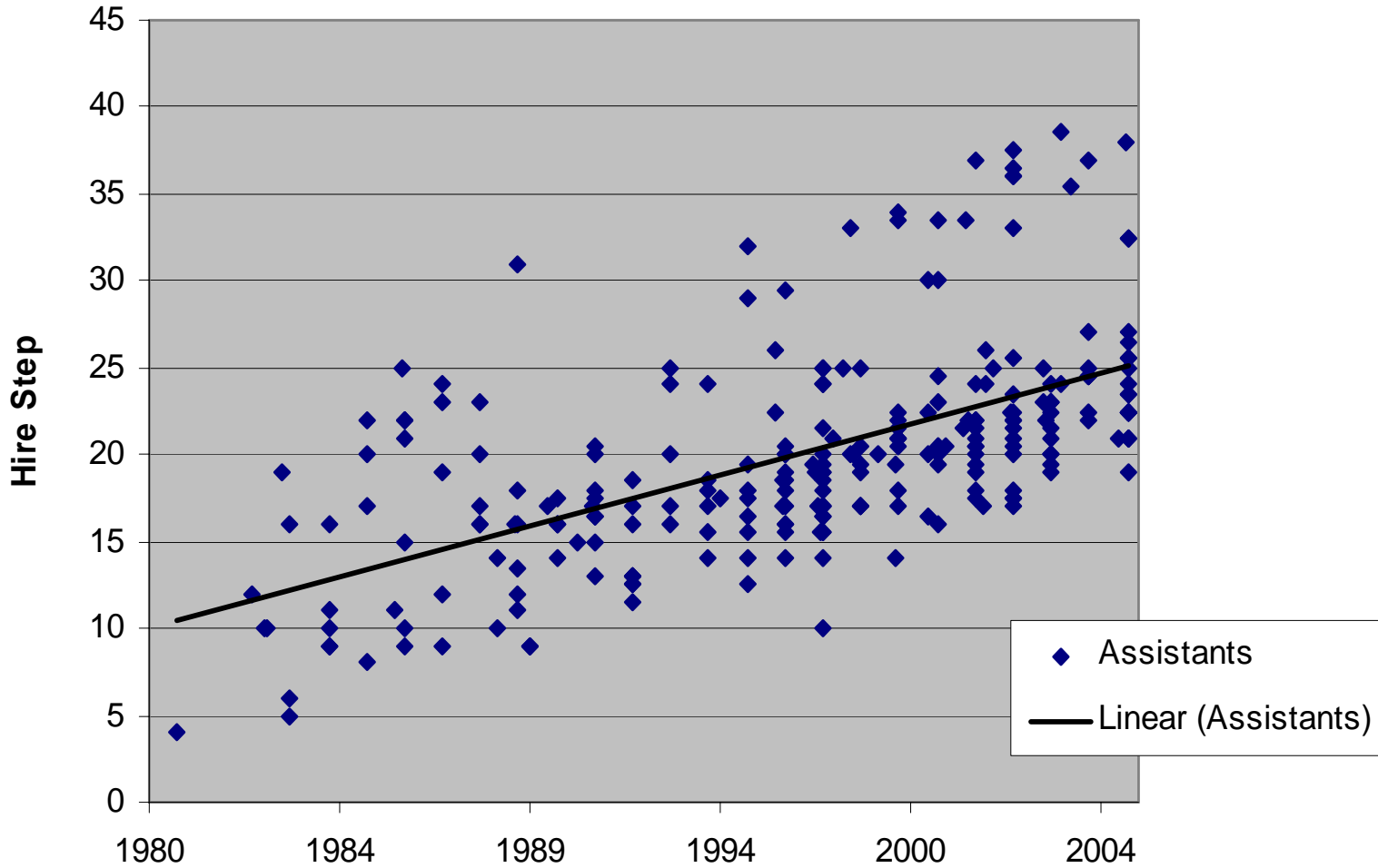
What is a year of service worth?

Salary compression can be most easily diagnosed when it becomes salary *inversion* whereby, with each year of experience at the institution, old-hire faculty salaries go down relative to new hire salaries.

Examination of Entry and Current 2005 Steps

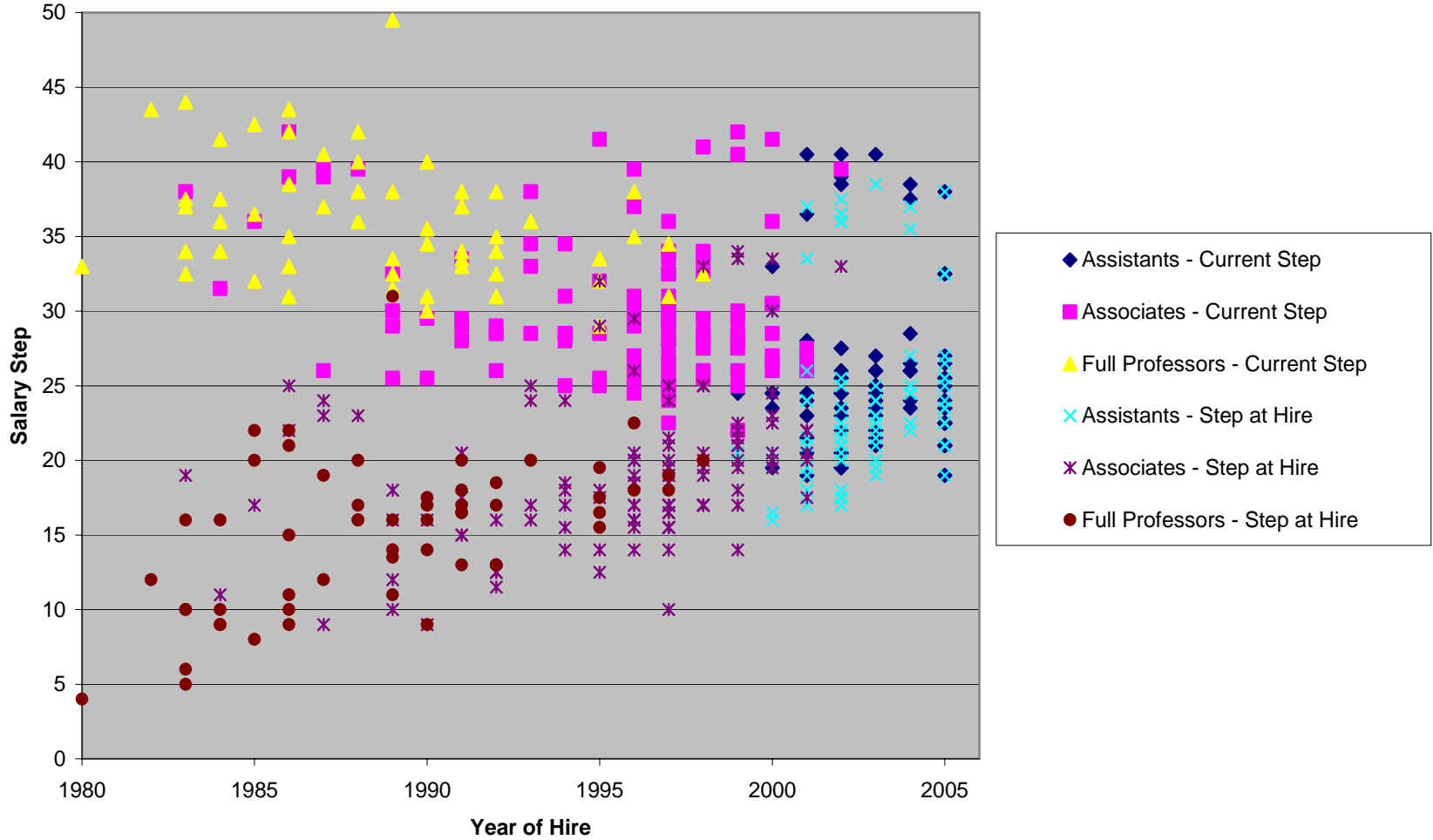


Assistant Professor Step at Hire 1980-2005

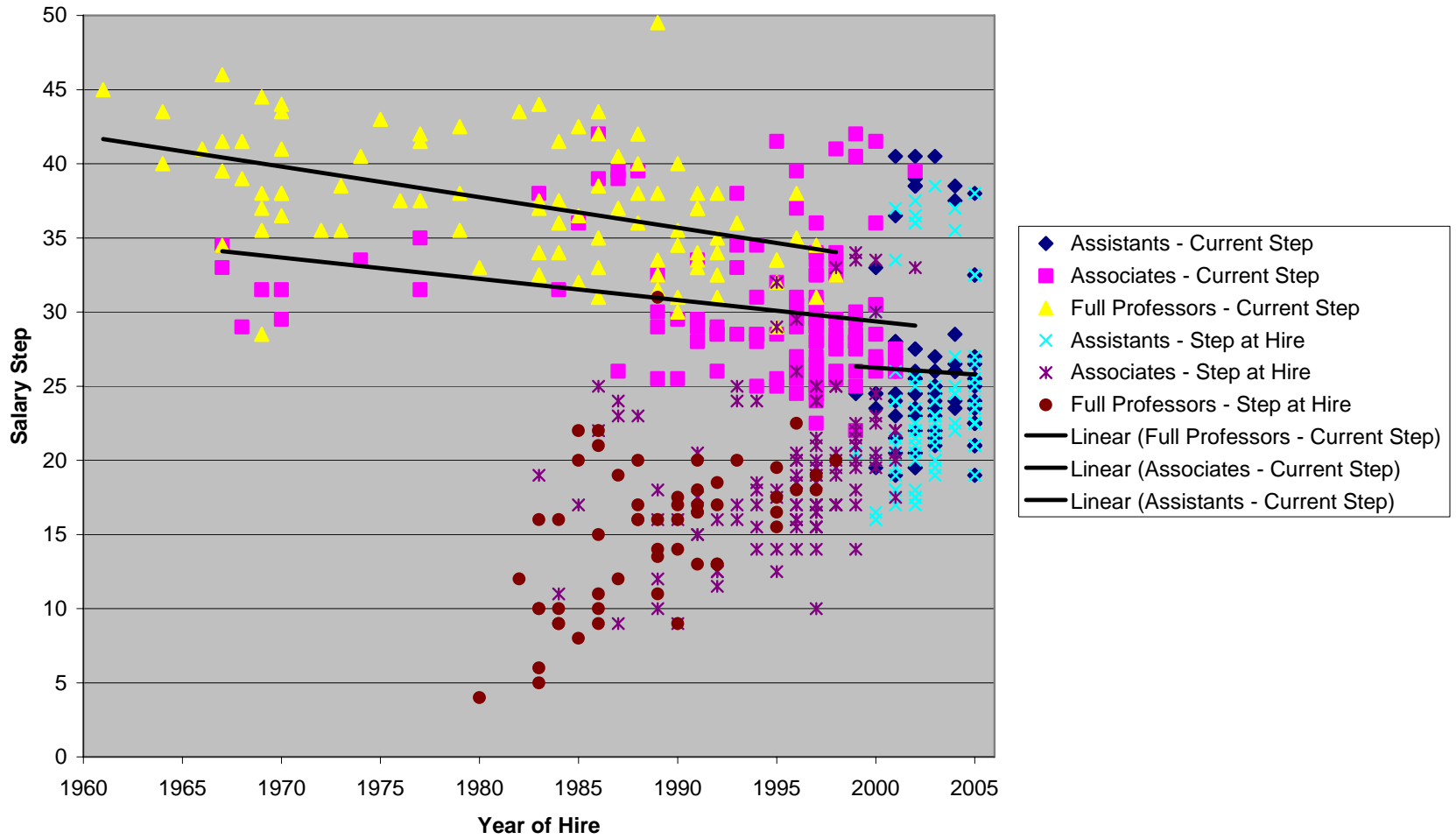


Step at hire has increased, on average, .62 per year for assistant professor hires.

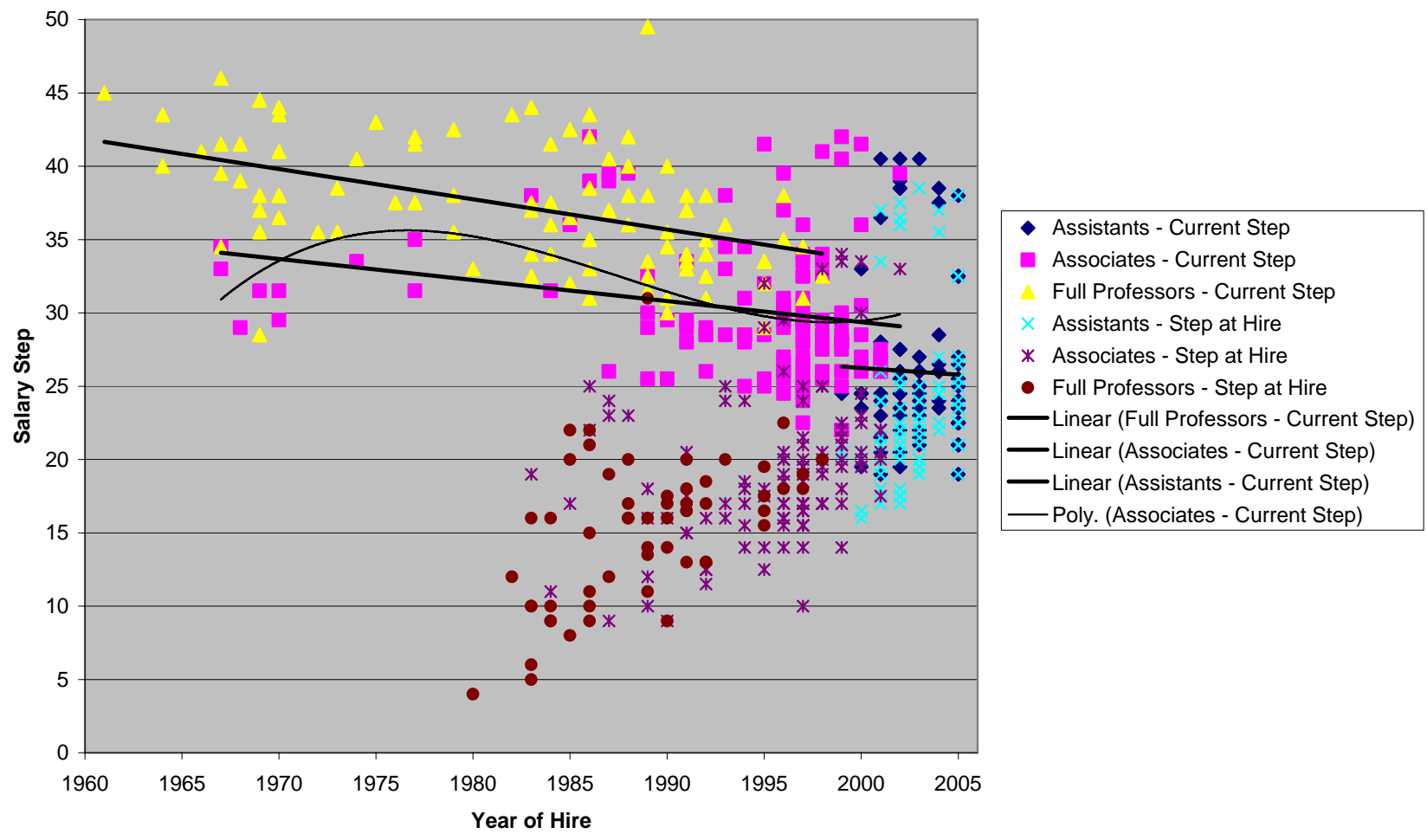
Faculty Hired as Assistant Professors since 1980 Current 2005 Step and Step at Hire



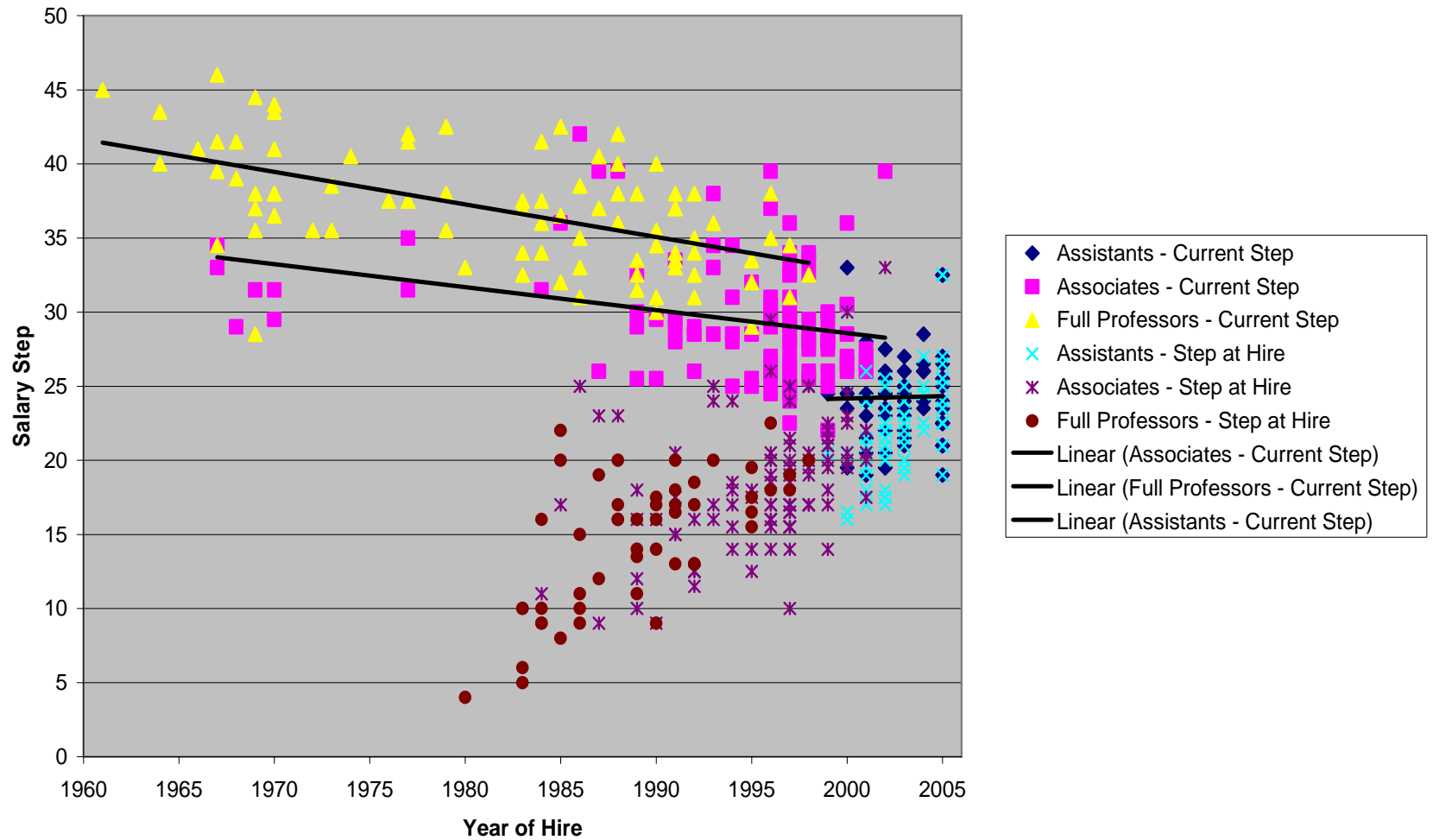
Faculty Hired as Assistant Professors Current Step in 2005 and Step at Hire Since 1980



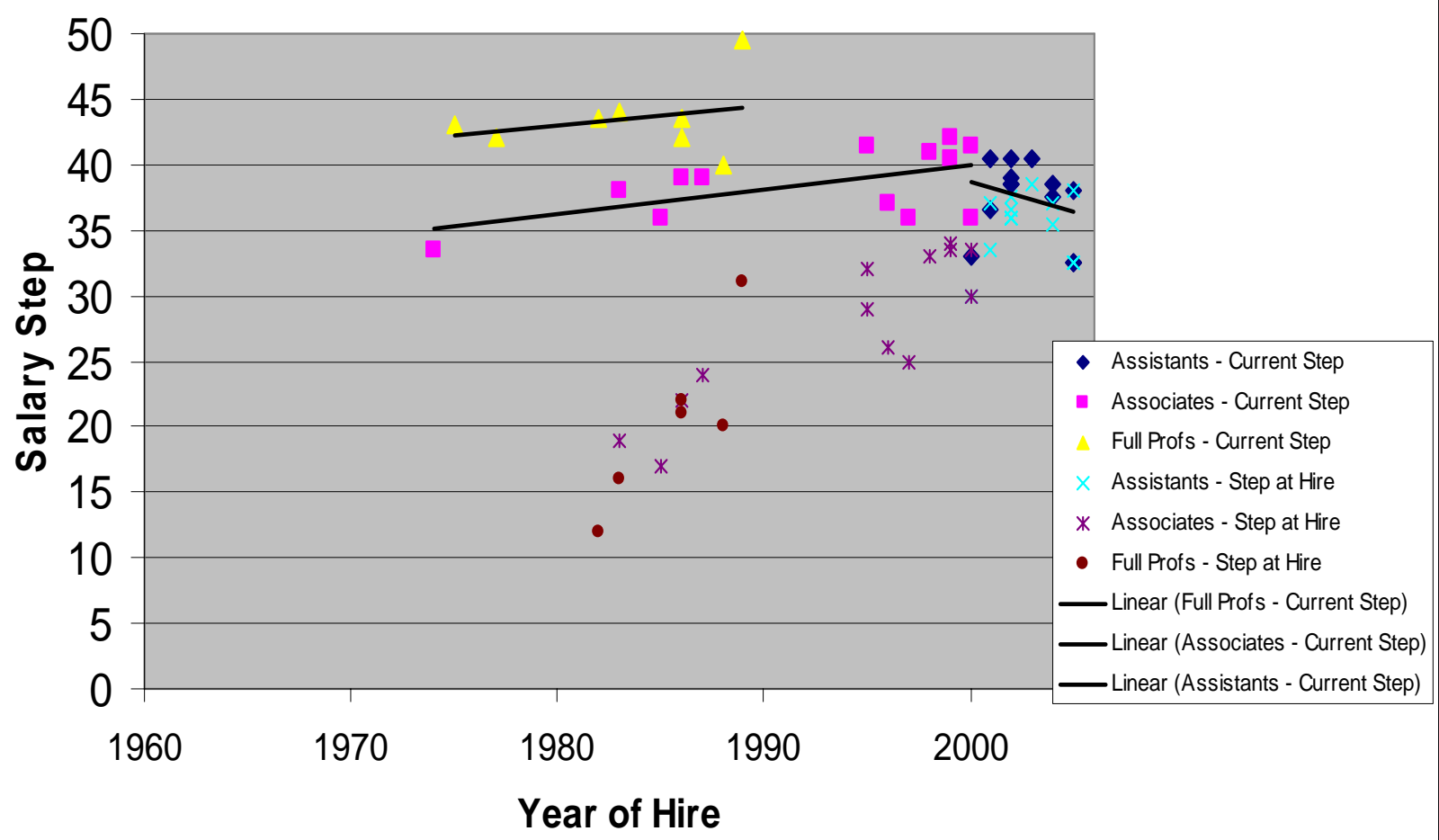
Faculty Hired as Assistant Professors Current Step in 2005 and Step at Hire Since 1980



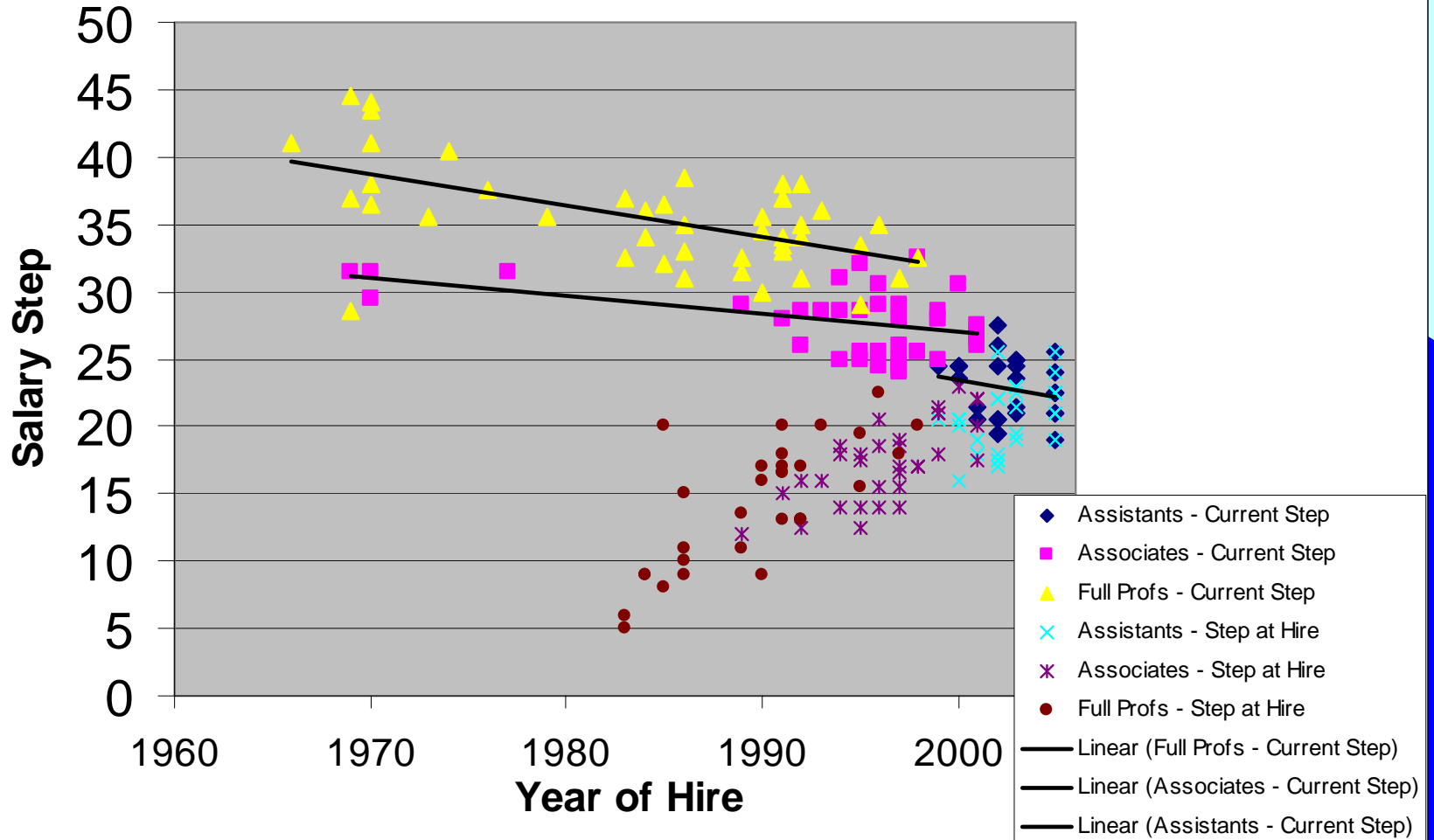
**Faculty Hired as Assistant Professors
Current Step in 2005 and Step at Hire Since 1980
Without CBE**



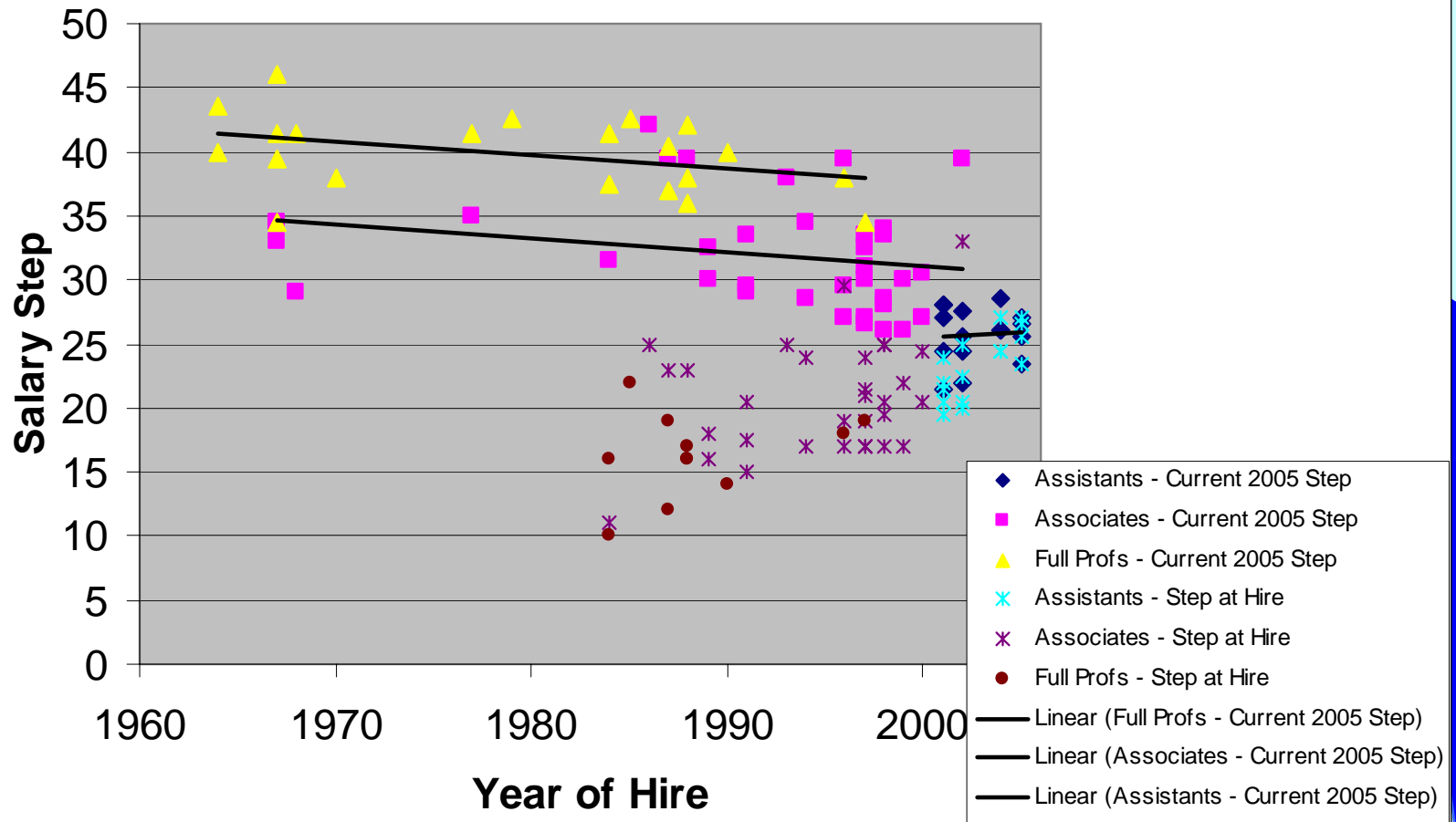
Business and Economics: Current 2005 Step and Step at Hire Since 1980



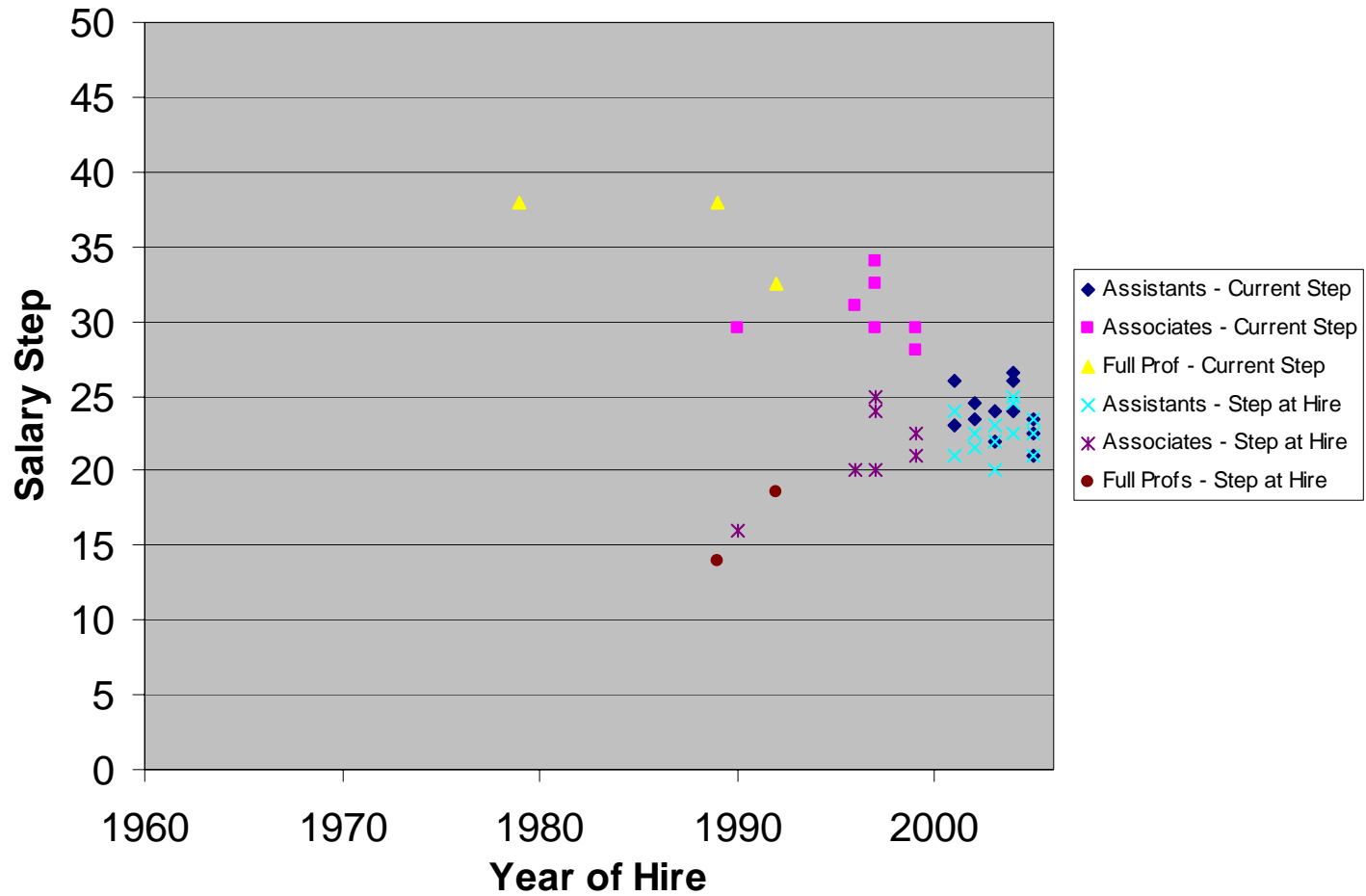
Humanities & Social Science: Current 2005 Step and Step at Hire since 1980



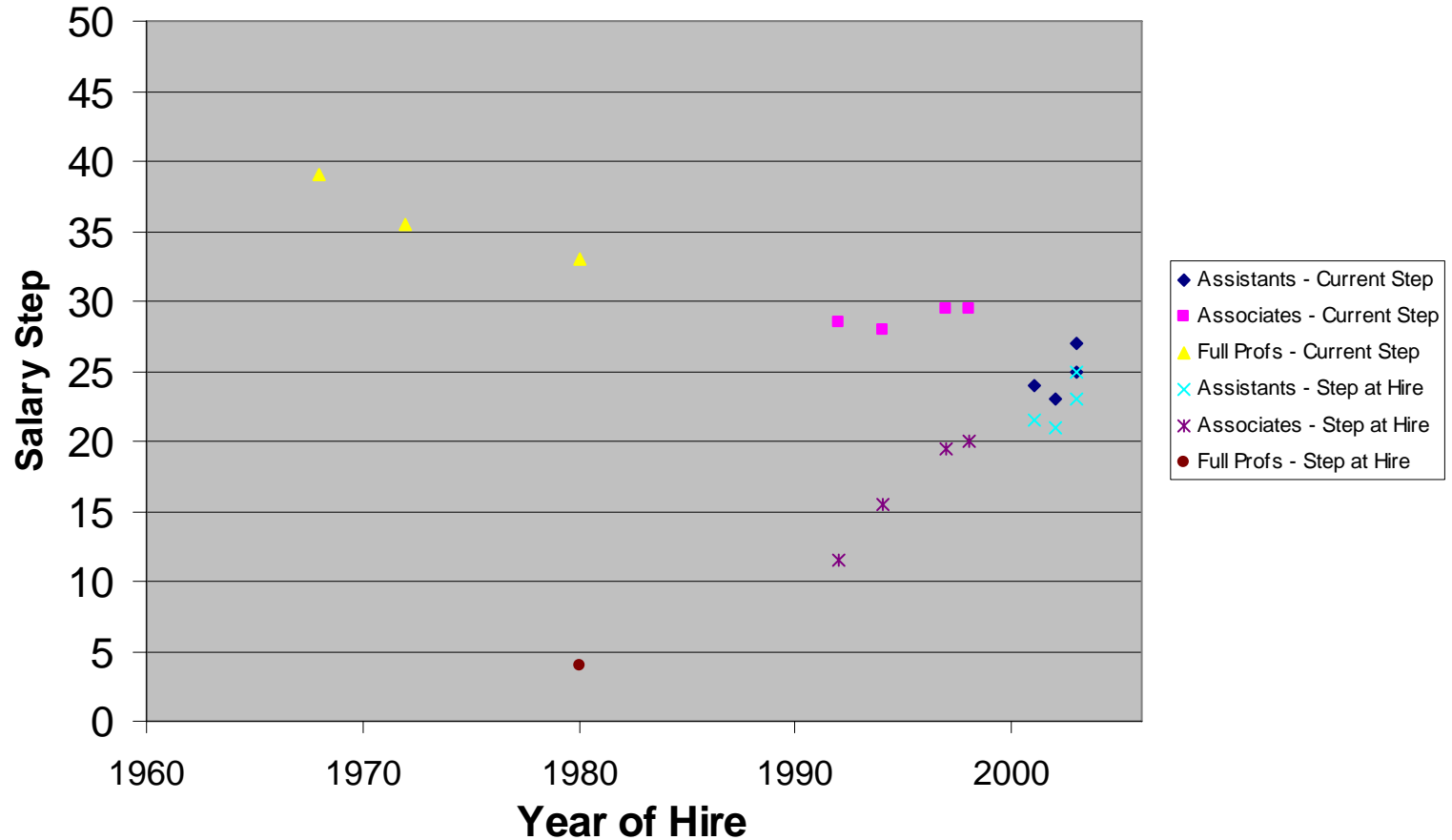
Sciences and Technology: Current 2005 Step and Step at Hire Since 1980



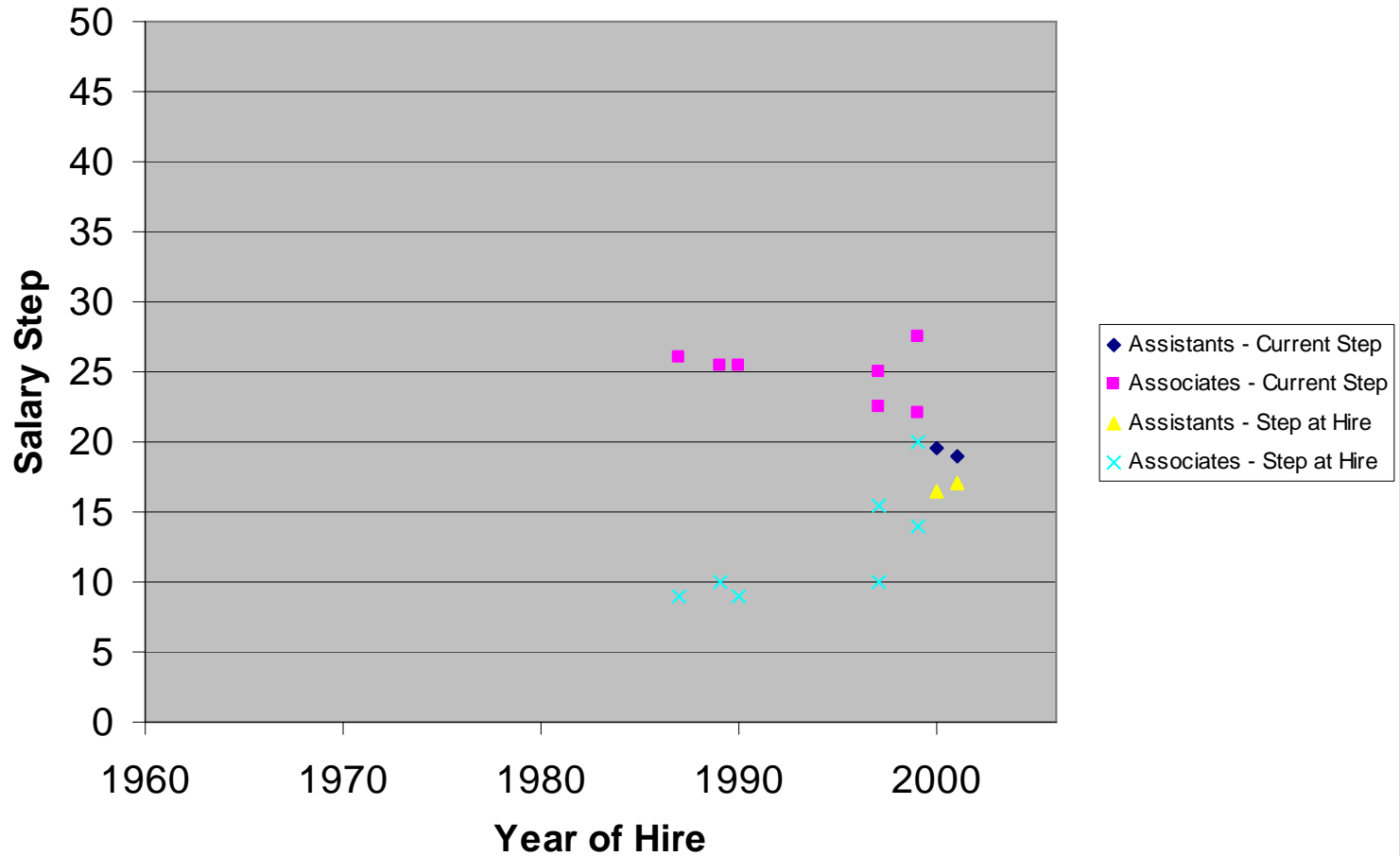
Woodring: Current Step and Step at Hire by Rank



Fairhaven: Current Step and Step at Hire by Rank



Library: Current Step and Step at Hire by Rank



Regression Model Tailoring

- include CBE separately
- address the curvilinearity noted relative to associate professors who don't move to full professor in a timely fashion.

How to model associate professors?

- We used quadratics and third order variables and ran regressions with different break points (6-7, 7-8, 8-9 years) to see which gave the highest R^2 .

As a result we used two associates:

- AssocUpto7 (N=90) (below 7.5 years went to the Upto7 group)
- Assoc8plus (N=33) (over 7.5 years went to the 8plus group)

Variables in the Compression Regression

- Disciplines
 - Small Colleges
 - Sub-categories of Larger Colleges
- Degree
- Years since degree before WWU hire
- Rank
- General Merit
- Years prior to current rank
- Years in current rank

Regression Population

- Hired as assistant professors
 - No one hired as a lecturer, instructor or visiting professor
 - No one hired in a senior rank (associate or full professor)
- This gave us a population of 298 faculty:
 - 85 Assistant professors
 - 123 Associate professors
 - 90 Full professors

Study Population by College

College	N

Hum&SS	109
Math&Sci	73
CBE	35
Fairhaven	11
Fine Arts	24
Woodring	23
Huxley	14
Library	9

Total	298

Years in Rank Results

All Faculty Except CBE

Adj R-Sq 0.9167

Variable	N	Parameter	
		Estimate	Pr > t
yearsinrankassistAllButCBE	72	285.84	0.2634
yearsinrankassocupto7AllButCBE	81	823.34	<.0001
yearsinrankassoc8plusAllButCBE	28	183.46	0.013
yearsinrankprofessorAllButCBE	82	568.05	<.0001

Years in Rank Results CBE

Adj R-Sq 0.9167

Variable	N	Estimate	Pr > t
yearsrankassistCBE	13	373.55	0.5295
yearsrankassocupto7CBE	9	-201.93	0.7357
yearsrankassoc8plusCBE	5	-626.66	0.036
yearsrankprofessorCBE	8	-159.29	0.4042

Years in Rank Coefficients Humanities and Social Science

College of Humanities and Social Science

Adj R-Sq 0.9172

Variable	Parameter		
	N	Estimate	Pr > t
years_in_rank_assist_HumSS	28	146.00	0.6872
years_in_rank_soc_upto7_HumSS	28	610.39	0.0453
years_in_rank_soc_8plus_HumSS	9	241.73	0.0317
years_in_rank_professor_HumSS	44	611.67	<.0001

Years in Rank Coefficients Sciences and Technology

College of Sciences and Technology

Adj R-Sq 0.9175

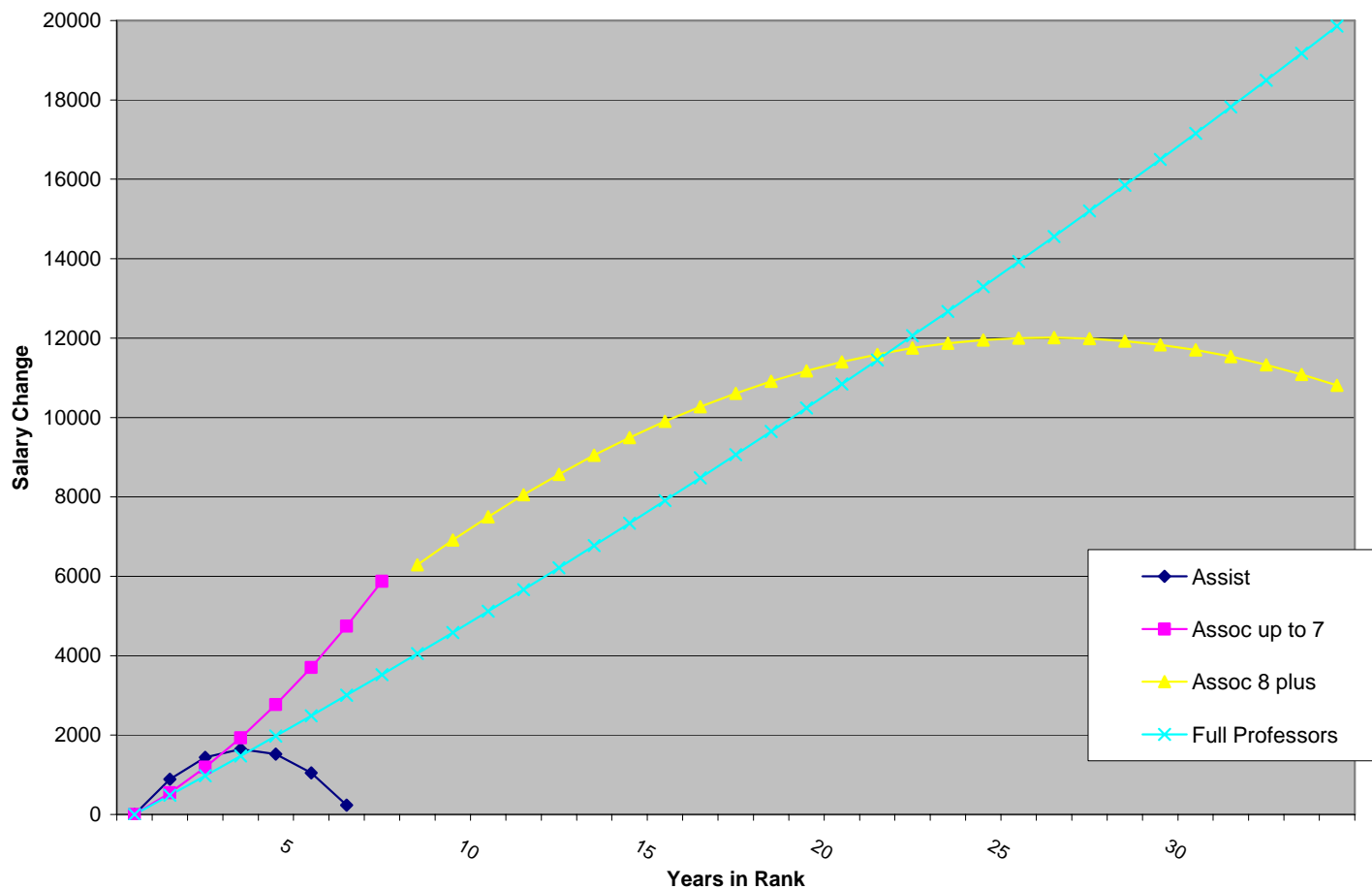
Variable		Parameter Estimate	Pr > t
	N		
yearsinrankassistMathSci	16	602.06	0.2635
yearsinrankassocupto7MathSci	22	739.96	0.0646
yearsinrankassoc8plusMathSci	14	62.31	0.5567
yearsinrankprofessorMathSci	21	489.04	<.0001

Smaller Colleges Years in Rank Coefficients

College	N	Coefficient for years in rank (3 ranks combined)	Pr > t
Fine Arts	24	611.32201	<.0001
Woodring	23	503.49597	0.0280
Huxley	14	714.98521	<.0001
Fairhaven	11	350.07971	0.0364
Library	9	-62.48060	0.7945

What about quadratics?

WWU 2005 Results for All Faculty Except CBE (with Quadratics)



Regression Output Years in Rank and Seniority

		Parameter	R ² =0.9167		Parameter	R ² =0.8974	
		Estimate	Pr >	t	Estimate	Pr > t	
		Years in Rank			Seniority		
assistAllButCBE	72	285.84	0.2634		264.54	0.3477	
assocupto7AllButCBE	81	823.34	<.0001		790.06	<.0001	
assoc8plusAllButCBE	28	183.46	0.0130		186.03	0.0198	
professorAllButCBE	82	568.05	<.0001		497.16	<.0001	
assistCBE	13	373.55	0.5295		303.27	0.6345	
assocupto7CBE	9	-201.93	0.7357		-97.59	0.8836	
assoc8plusCBE	5	-626.66	0.0360		-625.80	0.0878	
professorCBE	8	-159.29	0.4042		-229.03	0.4400	

Other checks

- Including only those with Ph.D. degrees
- Including gender and race variables
- Doing separate gender models
- Using a Sr. faculty equation to estimate the Jr. faculty salaries
- Scattering the residuals with special attention to date-of-hire cohorts
- Entering hiring cohorts as dummy variables

Testing the impact of hiring cohorts as dummy variables

		Parameter	$R^2 = 0.9164$
<u>Hiring Cohorts</u>		Estimate	Pr > t
cohortpre1975	33	-269.17009	0.9358
cohort75to84	23	822.06731	0.6779
cohort85to94	68	1057.78344	0.3504

Summary of Findings

- The regression analyses indicate:
 - positive returns for each year in rank for all (**including CBE**) assistant professors in the range of \$300
 - positive returns in the range of \$800 for each year in rank for non-CBE associate professors with fewer than 7.5 years in rank
 - positive returns in the range of \$180 for each year in rank for non-CBE associate professors with more than 7.5 years in rank
 - positive returns in the range of \$500 for each year in rank for non-CBE full professors.
- Inversion or the negative return for years in rank is indicated for those in the CBE senior ranks: associates with fewer than 7.5 years in rank and full professors in the range of -\$200, associates over 7.5 years in the range of -\$600.

WWU 2005 Salary Ratios by Rank

Across all departments at Western:

- ☉ assistant professors earn, on average, 86% of the average associate professor's salary, and
- ☉ associate professors, on average, earn 84% of the average full professor's salary.

According to the March-April 2006 issue of *Academe* at comparable institutions:

- ☉ assistant professors earn 84% of the average associate professor's salary, and
- ☉ associate professors earn 79% of the average full professor's salary.