FITTING SPLINE LINEAR FUNCTIONS TO DATA

Linear splines are an appealing way to portray, even analyze nonlinearities in trends. A spline function is a piecewise linear function, of which the pieces are connected at a fixed 'knot'. One has to define the knot in advance, but it can be interesting to compare a range of models in which the knot moves in a certain area. Spline functions can be fit with OLS regression models. The trick is to define a different predictor before and after the knot and combine these in one model. The following is trend analysis of mean PostMaterialism (range 1-3) score in the EVS2008 for cohorts aged 15 between 1925 and 2005. We put the knot at 1960, when I was seven years old and John Kennedy was elected President of the United States.

SPSS:

```
compute yr=year-1925.

regr /dep=pm /enter=yr /save=pred(y1).
graph /line=mean(y1) mean(pm) by year.

compute yr2=yr*yr.
regr /dep=pm /enter=yr yr2 /save=pred(y2).
graph /line=mean(y2) mean(pm) by year.

compute sy1=yr.
if (year ge 1960) sy1=1960-1925.
compute sy2=yr.
if (year lt 1960) sy2=1960-1925.
regr /dep=pm /enter=sy1 sy2 /save=pred(y3).
graph /line=mean(y3) mean(pm) by year.
```

THREE DIFFERENT WAYS TO FIT A TREND

LINEAR	QUADRATIC	LINEAR SPLINE