

# Market Forces, Trade Union Ideology and Trends in Swedish Wage Dispersion\*

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Compression of the distribution of relative wages was an important goal of Sweden's central confederation of blue-collar trade unions (LO) from the mid-1960s up to the breakdown of effective central wage formation in the early 1980s. In this article I analyze LO's success in achieving its ideology of wage equality in the market by comparing observed wage dispersion trends to (i) the time path of human capital dispersion and (ii) the time path of wage dispersion built into the central framework wage agreements. I interpret the results of the comparisons as yielding strong evidence that egalitarian trade union ideology exerted powerful influence on the course of Swedish wage distribution.

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I would suggest that any time a consensus emerges on the need for more equality, it can be at least partly achieved by making a frontal attack on wage differentials.

Lester Thurow (1972:81)

I believe it is misleading to argue that policies on low pay would, if successful, have a major effect on income distribution. Moreover, they are unlikely to be successful.

Richard Layard (1980:134)

## 1. Introduction

By the late 1970s equality of disposable income was greater in Sweden than in most other (and perhaps all other) industrial societies (see, for example, O'Higgins, Schmaus & Stephenson (1985). Disposable income has many sources in the modern welfare state, but wages and salaries are generally viewed as the fundamental constituent unit in conventional accounting sequences that begin with the distribution of market earnings and end with the distribution of economic well-being (Usitalo (1985) is a typical illustration). More impor-

tant, wages and salaries dwarf other sources of disposable income among the working-age population, even in countries such as Sweden with powerful tax and transfer systems. Since time worked for market pay is to a large degree a matter of choice in a society that implicitly has guaranteed every adult the right to full-time employment, the process of wage formation is the main engine of distribution of discretionary disposable income in contemporary Sweden.

Apart from full employment, economic equality was until recent years the most important goal of both the Swedish Social Democratic Party (SAP) and the central organization of blue-collar trade unions (LO), the twin pillars of Swedish Democratic socialism and for nearly a half century the dominant actors in the country's political economy. Pursuit of equality by LO motivated negotiation of framework wage agreements with the central confederation of employers (SAF) designed to compress the dispersion of relative wages. The success of LO's efforts to impose ideological norms on market wage distribution comprises the principal theme of this article.

The first sections of the article develop the idea of LO's egalitarian, 'solidarity'

wage policy, and document trends in Swedish wage dispersion before and after the breakdown of centralized wage bargaining in 1983. Subsequent sections compare aggregate dispersion trends to the time path of human capital dispersion, which reflects market forces, and to the time path of (hypothetical) wage dispersion implied by the central framework agreements, which embodied LO's redistributive goals. The results of these comparisons yield strong evidence that egalitarian trade union ideology exerted powerful influence on the course of wage distribution in Sweden.

## 2. Solidarity wage policy

Attempts by LO to influence the structure of relative wages have their intellectual origins in the writings of the LO economists Gösta Rehn and Rudolf Meidner (Turvey (1952) gives English translations of relevant essays.) Up to the mid-1960s the spirit of the policy is captured well by the phrase 'equal pay for equal work'. Weak industries and firms would not be permitted to survive by paying wages commensurate with their sub-par productivity and profitability. An active labor market policy, providing extensive job placement and retraining services, would ease the pain to dislocated workers created by the forced demise of inefficient firms as human and physical resources flowed toward more efficient ones. Viewed in this way, solidaristic wage policy conformed to orthodox economic principles, and it is widely believed to have enhanced Sweden's economic performance.

Around the middle of the 1960s, however, wage solidarity took a more radically egalitarian form, moving away from the initial concept of leveling wages among jobs of comparable difficulty, risk and skill, in the direction of leveling wage differentials more or less across-the-board. The shift, which might be caricatured as a transformation of the idea 'equal pay for equal work' to 'equal pay for all work', was marked by a concerted drive to improve the relative wages of the low paid, which clearly shows up in the distributional profiles of the central wage framework agreements negotiated by LO with SAF.<sup>1</sup>

Framework agreements with pronounced

low wage provisions ('low wage pots') were a distinguishing feature of wage formation in Sweden from 1964 all the way up to 1983, when central bargaining broke down and the emphasis on equality in the wage formation process (as well as in the political process) abated. Although LO exercised leadership in the drive for wage compression, the white collar union cartel TCO followed suit (especially the unions representing public sector white collar workers and lower echelon clerical employees), and probably for pretty much the same reason. During these years most Swedish trade union leaders (and rank-and-file members) shared a deep ideological commitment to equality.

## 3. Aggregate dispersion trends

Wage dispersion statistics suggest that the 'low wage pushes' launched by the unions in 1964 had considerable effect. Figures 1 and 2 graph squared coefficients of variation (squared CVs) computed from hourly wages of private sector blue-collar workers (LO-SAF) and monthly salaries of private sector white-collar employees (PTK-SAF),<sup>2</sup> respectively, over the years 1957-58 to 1987-88. In the case of blue-collar workers, two estimates of total wage dispersion are shown; one based on data (assembled by LO) on percentiles of hours, the other on data from SAF on individuals.<sup>3</sup> The SAF data are especially revealing for the latter half of the period because we have statistics on the between-contract-area and within-contract-area components of total wage dispersion.<sup>4</sup>

The squared CVs indicate that the biggest earnings compressions came between the mid-1960s and the mid-1970s, the first decade of the low wage pushes. Between contract areas, blue-collar dispersion declined by a whopping 74 per cent from 1965 to 1975. Over roughly the same period, total dispersion among private white-collar employees fell by 40 per cent. During the 1970s and after, trends in overall dispersion among both blue- and white-collar workers are dominated by developments within contract areas. This is not surprising because by the early 1970s the 'within' components made-up over 80 per cent of the total dis-

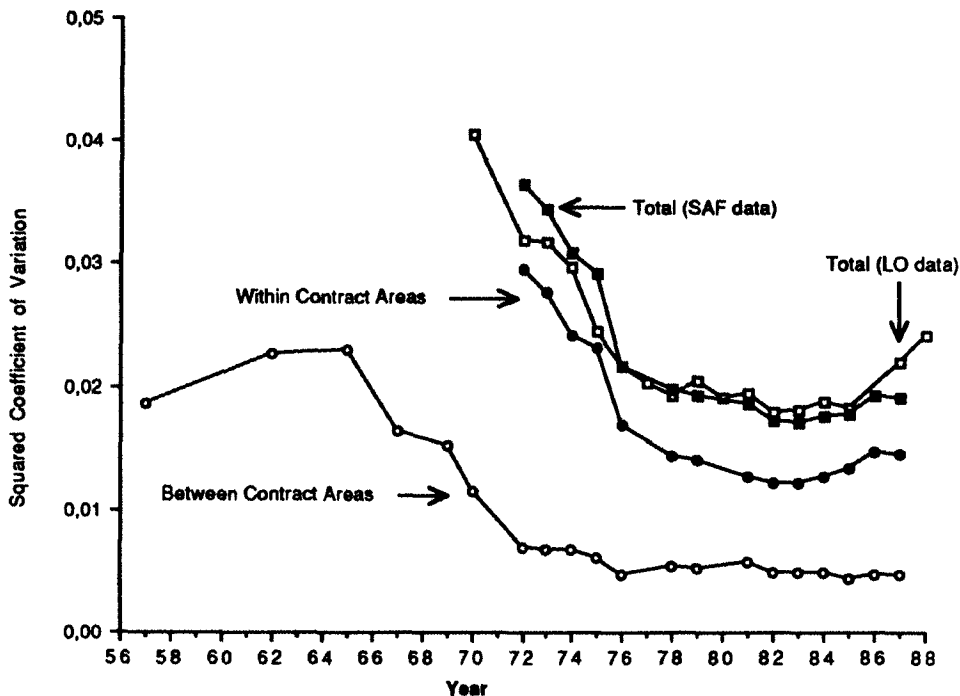


Figure 1. Wage dispersion among private sector blue-collar workers. (Sources: SAF, December 1987 and Computations from internal LO data supplied to author.)

persions. Wage and salary differentials between contract areas had been squeezed to bare bones levels earlier.<sup>5</sup>

Although the SAF statistics pertain to individuals and the LO statistics to hours of work and the two series are based on slightly different wage concepts, the time paths of total dispersion for blue-collar workers generally evolve in tandem. From 1970, the first observation in the LO series, to 1982-83, when wage compression bottomed-out, dispersion among blue-collar workers declined by 55 per cent. The compression of earnings in the SAF series is comparable. From 1972 (the first SAF observation) to the 1982-83 trough, dispersion declined by 53 per cent. After 1982-83 dispersion began to rise in pace with the breakdown of centralized wage formation and solidarity bargaining. (I remark on this further ahead). By 1989-90 about a quarter of the 1970 to 1982-83 compression was

reversed, and wage dispersion was back to the levels of the mid-1970s.

Despite the upturns in dispersion after 1982-83, the squared CV for all private sector blue-collar workers was around 40 per cent lower at the end of the 1980s than in 1970-72. The corresponding decline for all white-collar private employees was around 26 per cent. Within the white-collar ranks, unions representing lower echelon employees are known to have pushed hardest for equality. No doubt this explains why the decrease in the squared CV for the lower white-collar class ('Lower'), shown in the bottom part of Figure 2, was greater than the compression of wages among all white-collar employees ('Total').

Given data on the average wages of blue- and white-collar workers, the separate wage dispersions, graphed in Figures 1 and 2, may be combined to generate dispersions for the entire private sector labor force.

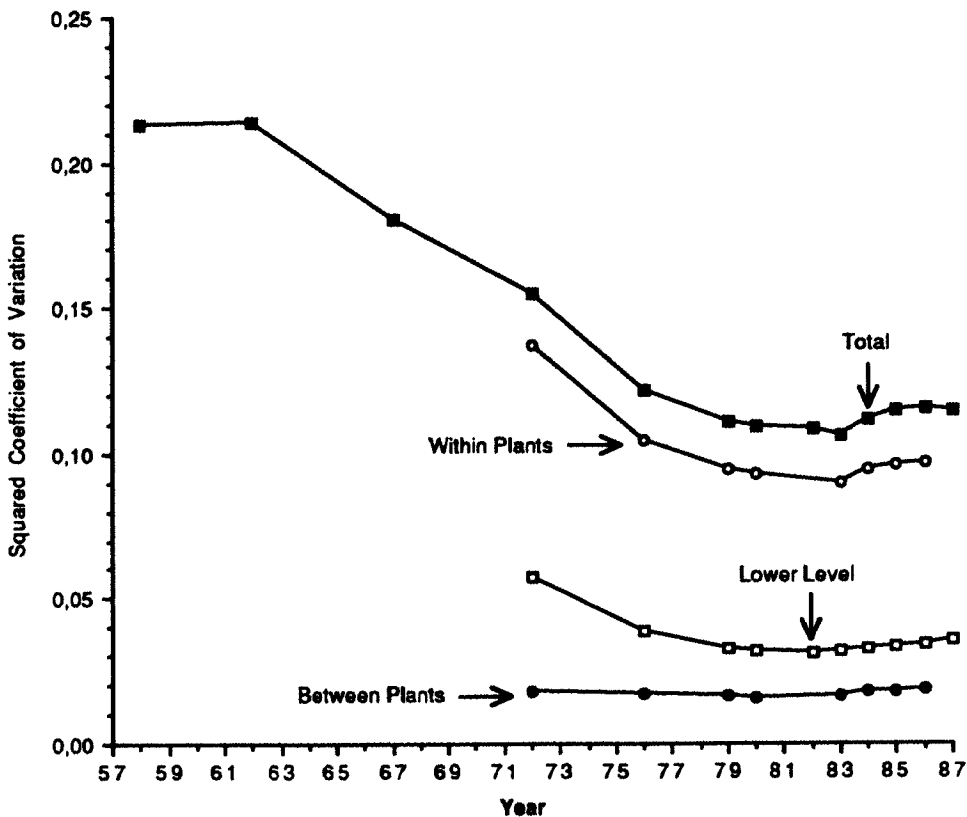


Figure 2. Wage dispersion among private sector white-collar workers. (Source: SAF, January 1985 and updates supplied to the author.)

The total dispersions are generated by using the variance decomposition formula

$$\sigma^2(\text{total}) = \beta \sigma^2(\text{blue collar}) + (1 - \beta) \sigma^2(\text{white collar}) + \beta(1 - \beta)(\bar{w}_{\text{blue}} - \bar{w}_{\text{white}})^2,$$

where  $\sigma^2$  denotes variance,  $\bar{w}$  denotes mean wages per common unit time and  $\beta$ ,  $(1 - \beta)$  are the labor force shares of the two groups (approximated here at a constant 0.7 for blue-collar and 0.3 for white-collar).

Figure 3 reports results of the computations. The evidence indicates that from the early 1970s to 1982-83, when wage inequality in Sweden reached its postwar trough, the institutionally autonomous processes of wage formation within the white-

and blue-collar unions<sup>6</sup> yielded a net decline in the squared coefficient of variation of wages among all private employees of about 30 to 35 per cent.<sup>7</sup>

#### 4. Market forces and wage distribution: human capital dispersions

By international standards, wage equality in Sweden evidently had gone quite far by the end of the 1970s. Inter-industry data certainly show Sweden to have less wage dispersion, in most cases very much less, than other industrial market economies. So do available data on individual wage dis-

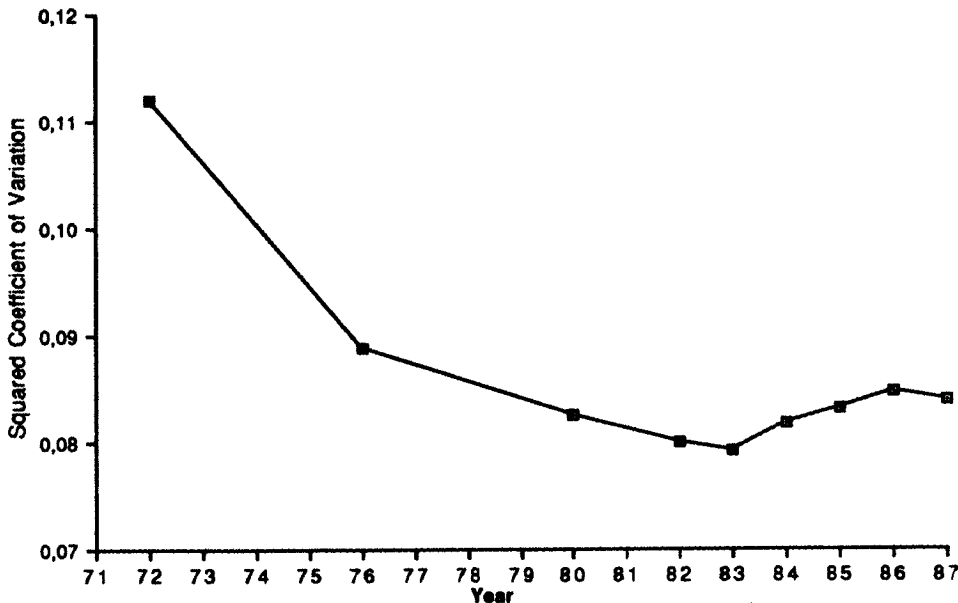


Figure 3. Total wage dispersion among all private sector workers. (Sources: SAF, January 1985, December 1987 and updates supplied privately to the author.)

persion in the US and the UK. Yet, who knows, wage dispersion in Sweden may have fallen anyway in an unfettered labor market, free of all union ideological pressure for equality, as a result of conventional supply and demand forces.

I address this issue by analyzing blue-collar wage dispersion trends in relation to trends in the dispersion of human capital among Swedish workers. Human capital theory points to skill distributions as the decisive source of wage distributions. Human capital formation, however, is surely endogenous, and its distribution could in some degree represent responses to externally determined relative wage structures, rather than the other way around. Nonetheless, if trends in Swedish wage dispersion conform closely to wage distributions implied by human capital models, one should hesitate before attaching much weight to the unions' egalitarian goals as an exogenous influence on wage equality.

Human capital wage theory, interpreted narrowly, gives a supply-side account of earnings distributions. Earnings reflect

market returns to investments individuals make in acquiring skills through formal schooling, vocational and on-the-job training and more passive 'learning by doing' (job experience). As Jacob Mincer, one of the founders of the human capital school, once put it, 'human capital models single out individual investment behavior as a basic factor in the heterogeneity of labor incomes' (Mincer 1970:6). Yet few would deny that workers' skill endowments raise productive efficiency per unit of labor, so the human capital view is intimately connected to the neoclassical marginal productivity theory of wages. In fact, Mincer wrote 'I interpret productivity-augmenting work experience as an investment phenomenon' (1974:65).

Stripped of all the theoretical bells and whistles, initial empirical work in the human capital tradition intensively investigated cross-sectional earnings profiles by estimating variations of Mincer's basic equation (Mincer 1974: ch. 5).

$$\ln W = a + b S + c \text{Exp} - d \text{Exp}^2, \quad (1)$$

where the left-side variable is the log of (in our case hourly) earnings, and the right-side variables are schooling/training ( $S$ ) and job experience ( $Exp$ ). A distinctive feature of the model, derived from the underlying theoretical assumptions which I do not present here, is the proposition that proportional returns ( $\ln W$ ) associated with accumulated job experience tend to diminish at later phases of labor force careers, because net human capital investment declines, the stock of human capital depreciates and physical and mental abilities deteriorate. Hence the coefficient  $d$  is shown with a negative sign in the equation (1).

Early investigations based on (1) were refined considerably in subsequent work, sometimes in a quite ad hoc fashion, as in the common practice of adding binary terms for gender and other sociological characteristics to a growing list of loosely rationalized right-side human capital variables.

Schooling was split up into formal education and vocational training, experience was divided into tenure on the current job and prior experience (to isolate, following Becker (1964), firm-specific human capital), and interactions between the two were introduced.

The dispersion of human capital variables among LO workers reported in Table 1, based on five representative surveys taken from 1968 to 1986, presents a mixed picture. The variance of schooling, both formal and vocational, rose substantially, probably because of the secular deepening of education and training among successive cohorts of younger job entrants. (The mean-adjusted variance of vocational training falls, but that is not relevant to the human capital story.) On the other hand, the dispersion of job experience, current and previous, declined in the LO labor force over the period.

What we need, however, is a way of

Table 1. *Dispersion of human capital among LO workers.*

Year	1968	1974	1981	1984	1986
Sample size	1373	1333	1643	566	610
<b>Total years of schooling</b>					
Mean	7.5	8.3	9.1	9.4	9.8
Variance	2.7	4.9	6.1	6.8	6.0
<b>Formal education</b>					
Mean	7.0	7.6	8.2	8.1	8.4
Variance	1.6	2.5	3.9	4.6	4.5
<b>Vocational training</b>					
Mean	0.45	0.71	0.94	1.2	1.4
Variance	1.2	1.7	1.9	3.5	3.7
<b>Total years of experience</b>					
Mean	23.2	21.8	19.5	20.2	20.8
Variance	220.9	195.4	179.9	149.6	139.5
<b>Current Job</b>					
Mean	9.8	9.5	8.9	10.3	10.1
Variance	109.9	96.4	75.4	78.3	79.5
<b>Previous jobs</b>					
Mean	13.5	12.4	10.7	9.9	10.8
Variance	174.0	140.9	114.8	94.6	98.7

Sources: 1968, 1974 and 1981 entries were computed from the LNU surveys; these surveys are described in Erikson & Åberg (1987). The 1984 and 1986 entries were computed from the HUS surveys; these surveys are described in Klevmarken (1990). Subsamples of LO workers were drawn from the full samples, in some cases by using an identification algorithm based on observations on related characteristics (for example, occupation and union membership).

weighting and combining the relevant human capital variances, along with their covariances. This requires a precise specification of the human capital model. I experimented with a number of variations of standard set-ups; the most satisfactory is shown in equation (2) with estimates obtained from the 1968 LNU subsample of LO workers (cf. the specifications in Holmlund 1984).

$$\begin{aligned} \text{In Hourly Wages 1968} = & 1.88 + 0.019 \text{ Yrs Formal Education} \\ & + 0.041 \text{ Yrs Vocational Training} + 0.0197 \text{ Yrs Current Job} \\ & - 0.00025 (\text{Yrs Current Job})^2 + 0.0143 \text{ Yrs Previous Jobs} \\ & - 0.000178 (\text{Yrs Previous Job})^2 \\ & - 0.0005 (\text{Yrs Current Job} * \text{Yrs Previous Jobs}) \end{aligned} \quad (2)$$

All estimated coefficients in this equation are highly significant at the usual test levels, take the conventional signs and have plausible magnitudes. Among LO workers in 1968, the returns to vocational training were twice those to formal education, and there was a small premium to firm-specific experience which declined with the number of years spent in prior jobs. The negative signs of the quadratic terms imply the familiar concavity of experience-related wage returns.

Taking the variance of the right side of equation (2) yields the human capital-based dispersion of 1968 log wages implied by the model. (The resulting quantity is, of course, identical to the explained variance of the 1968 regression.) Applying these 1968 coefficients to the variances and covariances of the human capital variables in the 1974, 1981, 1984 and 1986 surveys gives the time path of human capital-based dispersion of log wages in a hypothetical world in which returns to education, training and job-experience remained fixed at 1968 values. The results of this exercise are graphed in Figure 4, along with variances of actual log wages in the LO series described before.

To focus attention on trends, both actual and human capital dispersions are shown in proportion to their respective first year values (which therefore equal 1.0). The change in human capital wage dispersion from 1981 to 1984, which marks the shift from the LNU survey series to the HUS survey series, is shown by a dotted line. The break is identified because respondents

drawn from the 1984 and 1986 HUS surveys very likely include some non-LO workers temporarily occupying private blue-collar jobs (for example people normally engaged in professional-vocational training), whereas the subsample drawn from the 1968, 1974 and 1981 LNU surveys is comprised of LO members only. Consequently, at least some of the 1981 to 1984 jump in human capital wage dispersion is almost

surely due to the change of survey samples.

Figure 4 shows that the human capital variance of log wages fell much less than the actual variance from the late 1960s to the early 1980s: From 1968 to 1981 human capital wage dispersion declined around 18 per cent, while dispersion of actual log wages fell more than three times as much. By contrast, after the breakdown of central wage bargaining in the early 1980s actual dispersion rose markedly, while the trend of human capital dispersion (1984 to 1986) exhibits a much gentler upward slope. The gap between actual wage dispersion and human capital-based wage dispersion began to close.

Whether these trends in returns to human capital can be attributed to successful implementation of LO's egalitarian wage policies from the late 1960s to the early 1980s, and the erosion of centralized solidarity bargaining afterward, is altogether a different matter. Normal supply and demand forces might account for changes over the period in wage premiums owing to education, experience and the like. In view of the magnitudes we observe in Figure 4, however, this seems to me improbable (see also Klevmarken 1982).

More likely, LO's solidaristic wage policy was able to accelerate the egalitarian trajectory of market forces, here represented by dispersion of human capital, during the years of centralized wage formation under the 'low wage push' framework agreements (see Andersson (1987) for a related discussion). After 1983, as the scope of central

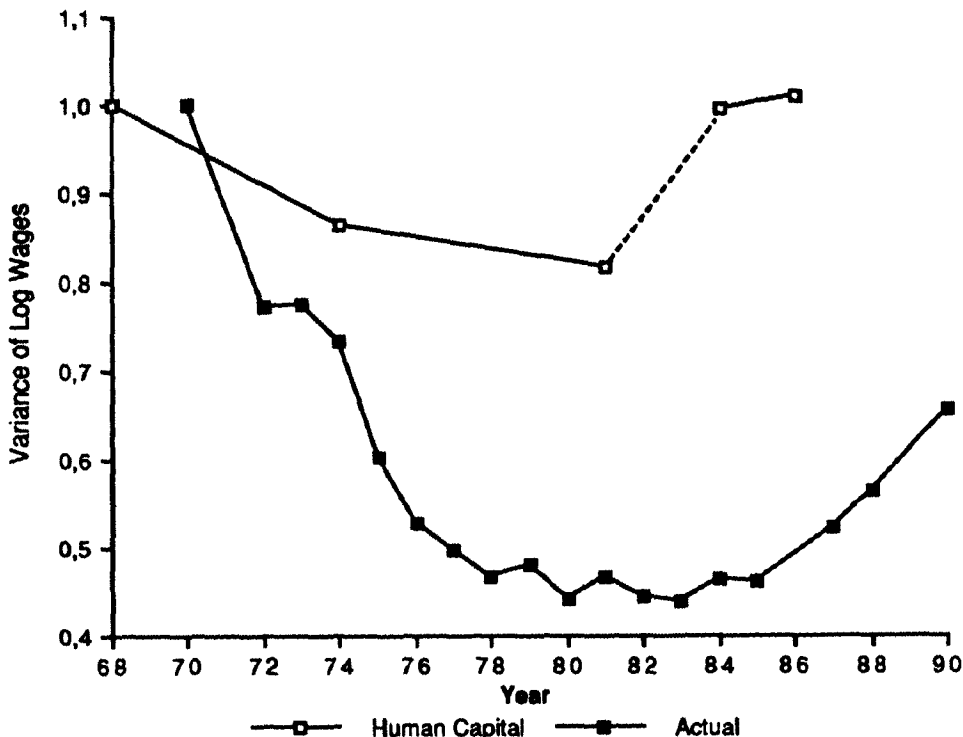


Figure 4. Trends in actual and human capital variance of log wages. (Sources: Actual computed from internal LO data supplied to the author. Human Capital based on analysis of LNU 1968, 1974 and 1981 surveys and HUS 1984 and 1986 surveys.)

bargaining contracted and the power of central authorities to set the parameters of industry and plant level wage agreements collapsed, raw market forces began to dominate the evolution of the relative wage structure. The next section develops the distributional implications of solidarity bargaining in some detail.

## 5. Trade union ideology and wage distribution: the central framework agreements

### 5.1. The institutional setting

From 1956 to 1983 blue-collar wage formation in Sweden consisted of a highly integrated, three-tier process: a central

framework agreement negotiated by the peak union and employer associations (LO and SAF), followed by industry bargaining, and then plant level negotiations to implement the arrangements contracted above. The central agreements covered the whole private blue-collar labor force and specified wage increases for one, two and, on a couple of occasions, three contract years afterward. The wage parameters of multi-year agreements typically were different for each contract year and sometimes were state contingent, providing opportunities for renegotiation (notably during the high inflation years following the energy supply shocks). So for our purposes, central bargains spanning several years, as adjusted subsequently, may be treated as a sequence of annual agreements.

The central framework contracts specified the aggregate increase in the wage bill



for each industrial contract area and provided strong (egalitarian) norms for its distribution among individual workers. On the surface, the aggregate cost constraints specified by the frames for each industry were supposed to be binding at the lower levels. As a practical matter, however, no one took the central cost constraints seriously, and total wage rises routinely exceeded the frame provisions by large margins. Wage drift, originating largely at the plant level, was a predictable feature of the system.<sup>8</sup>

The distributional profiles of the central frames were an entirely different matter. The central contracts permitted deviations from the wage distributions spelled out in the frames, but only by agreement among employers and unions at industry level negotiations (the so-called 'Block' rule), which was a potent force advancing lower level conformity to central intentions. And in the absence of timely agreement at industry bargaining, central authorities had the power to compel compliance to the frame (putting the parties to 'Chapter').

After 1982 central authority over wage formation dissipated and Sweden experienced a change of wage formation regime – from highly centralized to industry level bargaining.<sup>9</sup> Central bargaining was broken in 1983 when the employers association in engineering and fabricated metals (Verkstadsföreningen), which accounts for more than one-half the industrial labor force, achieved their long-standing goal of prying the industry's union (Metall) away from the frame and negotiating a separate agreement. Although central frames covering the whole blue-collar private workforce were forged in 1985 and 1986–87, the agreements were purely notional. Parties at industry bargaining were under no obligation to adhere to the distributional profiles of the frames (there were no 'Block' rules), and central authorities in any case had no legal instrument to enforce the frames' provisions (there were no 'Chapter' clauses).

## 5.2. Agreement mechanics

Earlier I pointed out that trends in wage dispersion before and after 1982–83 are consistent with the idea that the egalitarian provisions of the central framework agree-

ments affected market wage distribution. Formalization of the framework accords allows us to simulate hypothetical 'frame wage' series and, hence, to analyze how well the dispersion of relative wages that would have been generated by exact implementation at lower bargaining levels of the central agreements tracks the dispersion of observed wages.

LO's big push for wage equalization began in 1964 with the first 'low wage pot' framework agreement (låglönesatsning). The structure of central wage frameworks varied somewhat over time, but during the era of low-wage-pushes from the mid-1960s to the early 1980s wage increases for each agreement year (indexed  $t$ ) typically were composed of: (i) a common flat rate amount specified in öre (which we denote  $k_t$ ) going to every worker (indexed by  $i$ ); (ii) wage drift guarantee amounts (denoted  $g_{it}$ ), designed to compensate workers who were disadvantaged by market drift since the last frame agreement; (iii) cost of living adjustments ( $c_t$ ), usually paid out in a flat rate manner, which begin to appear in frame contracts toward the late 1970s; and (iv) low wage adjustment amounts.<sup>10</sup>

Low wage adjustments were targeted on workers whose actual hourly wages ( $w^a$ ) observed in the (second quarter) of the previous agreement year ( $w^a_{i,t-1}$ ) stood below a certain reference level wage ( $w^*$ ), originally called the low wage boundary (låglönegräns). Adjustment amounts were based on the computation of a low wage pot. Each worker's notional contribution to (and receipt from) the pot was based on a proportion ( $p_i$ ) of the difference between the previous year's recorded second quarter wage and the low wage boundary, up to a plant level ceiling per worked hour ( $L_i$ ).

In terms of the main elements just specified, typical 'frame wage' changes from the second quarter of agreement year  $t-1$  to the second quarter of year  $t$  may be written

$$(w^f_{it} - w^a_{i,t-1}) = k_t + g_{i,t-1} + c_{t-1} + \min [L_i, p_i(w_i^* - w^a_{i,t-1})], \quad (3a)$$

if  $w^a_{i,t-1} < w_i^*$ , and

$$(w^f_{it} - w^a_{i,t-1}) = k_t + g_{i,t-1} + c_{t-1} \quad (3b)$$

if  $w_{i,t-1}^a \geq w_t^*$ , and hence

$$w_{it}^f = w_{i,t-1}^a + k_t + c_{t-1} + g_{i,t-1} + \min[L_t, p_t(w_t^* - w_{i,t-1}^a)] \cdot D_{it}, \quad (3c)$$

where  $w_{it}^f$  is the second quarter frame wage (usually negotiated in the first quarter of each agreement year) for each worker under the year- $t$  central agreement,  $w_{i,t-1}^a$  is the actual wage of each worker in the previous year's second quarter (the base wage used by central negotiators), and  $D_{it} = 1$  if  $w_{i,t-1}^a < w_t^*$ , else  $D_{it} = 0$ .

Notice that the  $t-1$  to  $t$  wage increase specified by (1a)–(1c) includes current agreement year (year  $t$ ) flat rates and low wage adjustments, and lagged (year  $t-1$ ) drift guarantees and cost of living adjustments. This occurs because of the relation in time of the pay-out dates of the various contract elements to the actual second quarter wages observed by the central bargaining parties. Elements  $c$  and  $g$  were normally paid out after second quarter wages in the current agreement year were recorded. The profile of earnings increases under cen-

tral frame agreements struck along the lines of equations 1a and 1b, net of the elements  $c$  and  $g$ , is graphed in Figure 5.

As I noted earlier, drift guarantees ( $g_{it}$ ) provided by the central frame agreements were designed to offset potentially disequalizing changes in relative wages due to market wage drift from the previous year. More precisely, the guarantee amount going to each worker under a typical agreement may be expressed as the difference between a common guarantee ceiling ( $GL_t$ ), specified in öre and often normed to average drift in the SAF-LO area, and the market wage drift experienced by workers from the last second quarter to the current one. Market drift is the difference between a worker's actual second quarter-to-second quarter wage change and the contractual wage change for the same period. Hence, it is useful to define the variable  $g_{it}^*$ :

$$g_{it}^* = GL_t - \{(w_{i,t}^a - w_{i,t-1}^a) - [k_t + c_{t-1} + g_{i,t-1} + \min(L_t, p_t(w_t^* - w_{i,t-1}^a)) \cdot D_{it}]\}, \quad (4a)$$

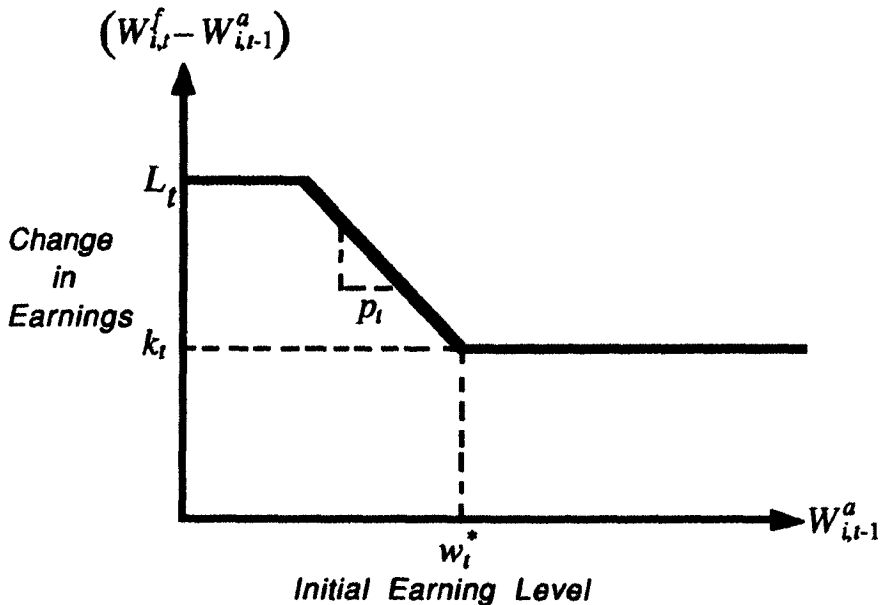


Figure 5. Planned wage changes under the low wage pot framework agreements.

which, by (3c), is

$$g_{it}^* = GL_t - \{w_{i,t}^a - w_{i,t}^f\} \quad (4b)$$

= guarantee ceiling - wage drift.

For workers experiencing wage drift (the expression inside the curly brackets in equation (4)) greater than the ceiling  $GL_t$ , the drift guarantee amount  $g_{it}$  was supposed to be set to zero.<sup>11</sup> And workers with negative wage drift (a rare event normally experienced by those downgraded to jobs with lower pay) were supposed to receive the ceiling amount  $GL_t$ . Drift guarantee payouts were thus determined by:

$$g_{it} = g_{it}^* \quad \text{if } g_{it}^* \geq 0$$

(market drift below the ceiling)

$$g_{it} = 0 \quad \text{if } g_{it}^* < 0$$

(market drift above the ceiling)

$$g_{it} = GL_t \quad \text{if } g_{it}^* > GL_t$$

(negative market drift). (4c)

When drift guarantee amounts were paid out along the lines implicit in the distributional intention of the frames, significant episodes of wage drift that broke out in the market, but were confined to selected workers or regions of the wage distribution, were spread by *central design* throughout the entire wage structure, after a lag of about a year. (Recall that the lagged guarantee amounts,  $g_{i,t-1}$ , are what affect the current second quarter 'frame' wages,  $w_{i,t}^f$ ; see equation (4c). Such drift contagion necessarily was implied by attempts to restore ex post the distributional thrust of the central wage frame once the pattern of market drift 'disturbances' become known.

Finally, it is important to recognize that the definition of wage drift in (4a) and (4b) and, hence, drift guarantees in (4c), are normed to the wage increases specified in the central framework agreements. Drift is defined as the difference between actual second quarter wages and second quarter wages implied by the framework wage profiles, even though under the frames' provisions industry contracts were permitted to establish alternative distribution plans. This conception of wage drift departs from the customary one which is based on

the difference between actual wage increases and wage rises contracted at the industry bargaining level (avtalsområden).<sup>12</sup> The departure is intentional. My purpose is to evaluate how successfully wage distributions implied by the frame account for observed distributions, and I am indifferent about whether the slippage between frame wages and actual wages occurred contractually at the industry level, or through conventional drift at the local level.

### 5.3. Simulating the dispersion of frame wages

Simulation of (hypothetical) frame wages along the lines of equations (3) and (4) yielded the series used to compute variances of log frame wages, which are graphed along with variances of log actual wages in Figure 6. The main proposition that the exercise was designed to test receives obvious support: From the early 1970s until the erosion of central bargaining in the early 1980s the variances of log frame wages exhibit the same pronounced downward trend as the dispersions registered in the market. It is of course possible that the egalitarian thrust of the framework agreements merely mimicked market forces running in the same direction. Yet the close correspondence of frame and market wage dispersions depicted in Figure 6 is significant evidence that centralized solidarity bargaining was a powerful instrument of wage compression in Sweden, particularly when viewed in the light of the sharp upward trend of market wage dispersion after the breakdown of central solidarity bargaining in 1982-83.

Naturally there was slippage from the frame to the market. In every year the frame implied a more compressed wage distribution than is observed in actual wage data. On average, the data in Figure 6 indicate that actual wage dispersion exceeded frame wage dispersion by about 18 per cent over 1970 to 1982. Put the other way around, just over 80 per cent of the compression embedded in frame wages was achieved in the market - not a bad record for LO's egalitarian wage policy, especially if one believes that frame dispersions are largely predetermined with respect to an-

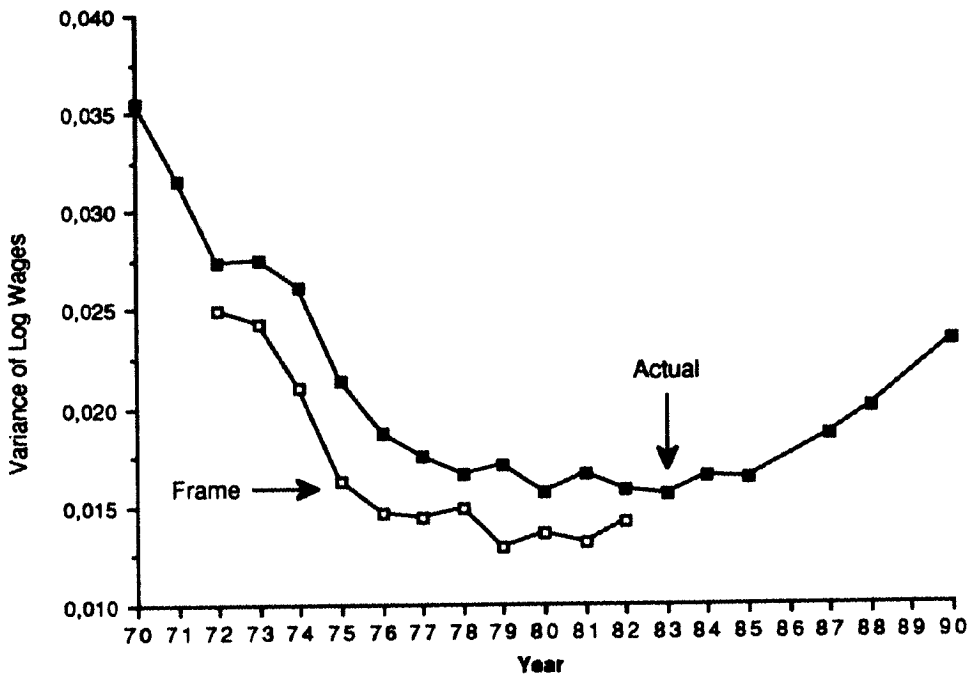


Figure 6. Dispersion of actual wages and frame wages LO blue-collar private workers.

anticipated current and known past market dispersions.<sup>13</sup>

## 6. Concluding remarks on wage bargaining and equality in Sweden

In the main body of this article I showed that the pronounced downward trend of Swedish wage dispersion during the era of centralized wage formation deviated sharply from projections based on human capital dispersions, but conformed closely to the distributions built into framework wage agreements incorporating strong egalitarian norms. In conjunction with substantial rise in wage dispersion following the dissolution of effective central bargaining in 1982–83, I interpreted the evidence to imply (though, of course, not to 'prove') an important role for the ideology of equality, as embodied in the distributive provisions of the central frames, in explaining Swedish wage dispersion trends.

Yet the rather simple empiricism of this article makes no contribution at all to understanding the shift in the balance of power between central trade unions and employers, the exacerbation of distributional tensions within unions, or other developments that may explain the change of wage formation regime from highly centralized to industry level bargaining and the associated change in the ideological climate. By the second half of the 1980s central union organizations actually favored increased dispersion: LO policy called for escalating the relative wages of the (high-skilled) 'wrongly paid' and, along with the central white collar union, TCO, began to feature the principles of 'different pay for different work' and 'fair pay differentials'.

Joined to changes in fiscal policy launched in 1983–85 and greatly accelerated by the 1990–91 (modified) 'flat' tax reform, these shifts in bargaining institutions and union thinking represented a significant retreat from the decades long commitment

to equality in both state and market spheres and yielded large rises in wage dispersion and disposable income inequality. An attempt to account for these remarkable developments in Swedish wage formation and public finance lies beyond the scope of this article.

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### Notes

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<sup>1</sup> The institutional setting of Swedish wage formation and the formal structure of the central wage framework agreements are developed ahead.

<sup>2</sup> I have no comprehensive data on wages and salary dispersion for public sector employees. It is very likely, however, that compression of public sector wages was as great, or even greater, than the private sector compression documented here. Also see the fragmentary evidence on public sector wage differentials presented ahead.

<sup>3</sup> The SAF coefficients of variation were computed from average hourly wage payments to individuals during the second quarter of each year. The SAF CV statistics were supplied to me directly by SAF officials. The LO dispersions were computed by the author from average second-quarter hourly wages for each percentile of worked hours in the worked hours distribution. The percentile wages were supplied to me by LO officials. The (small) dissimilarities between the SAF and LO dispersions stem from the difference between distributions of individuals and (percentiles of) worked hours (aside from aggregation to percentiles, part-time workers fall disproportionately at the lower end

of the hourly wage distributions) and from differences in the way that SAF and LO statisticians identify and expurgate errors in the raw wage data reported by employers. Hibbs (1990a) supplies more details about the data.

<sup>4</sup> The 'between' dispersions are weighted by shares of employment in each contract area, so the decomposability of variance-based dispersion statistics ensures that the overall or 'total' squared CV is equal to the sum of the squared 'between' CV and squared 'within' CV.

<sup>5</sup> The data in Figure 1 show why inferences about the impact of trade union power and the like on trends in inter-industry wage differentials are based on weak empirics (see, for example, Hedström & Swedberg (1985)). By the late 1960s the remaining dispersion between contract areas (which roughly correspond to ISIC industries) was so slight in Sweden that little or no room was left for additional compression of the inter-industry wage structure.

<sup>6</sup> To the degree that 'cross-collar' wage rivalry and other transmission mechanisms were at work, the wage formation processes were of course not behaviorally autonomous.

<sup>7</sup> Hibbs (1990b) supplies more data on relative wage trends within and across class and occupational groups.

<sup>8</sup> Hibbs & Locking (1991) investigate the joint endogeneity of frame wage changes and wage drift and develop the implications of central bargaining for the path of total wage inflation in Sweden.

<sup>9</sup> See Ahlén (1989) and Elvander (1986) for more detailed institutional histories.

<sup>10</sup> Some agreements also included so-called 'trade union pots' and 'non-level increasing' wage components. The amounts tended to be small and I do not discuss them further here. Account was taken of them, however, when computing the 'frame wage' distributions described ahead.

<sup>11</sup> The drift guarantee formulas in fact were usually written in terms of average wage changes among time and piece-rate workers at the plant level (and sometimes, for the smaller ones, in terms of average wage changes at the level of industry-contract areas). But the intent of the frame agreements was clearly to compensate individuals in the way indicated by equation (4). So the guarantee formulas have been 'individualized' according to the implicit distributional intention in order to compute frame wages and frame wage dispersions.

<sup>12</sup> The frame-based conception of drift yields the same aggregate quantity (increase in the total wage bill in excess of the central agreement provision) as the customary procedure, as long as the aggregate wage cost constraints specified in the frames were strictly adhered to by industry settlements. Although most aggregate drift arises

from plant level settlements, industry agreements are on occasion known to have satisfied frame cost constraints by creative accounting. More detail on the formalization of the framework agreements appears in Hibbs (1990a) and Ekdahl (1989).

<sup>13</sup> It is of course most likely that the wage compression built into the framework agreements was very much influenced by what the parties (and, especially, LO) believed could be achieved. I do not pursue this important topic further in this paper, however.

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