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## DISCUSSION PAPER SERIES

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**THE CARING HAND THAT CRIPPLES:  
THE EAST GERMAN LABOUR  
MARKET AFTER REUNIFICATION**

Dennis J. Snower and Christian Merkl

*LABOUR ECONOMICS*



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# THE CARING HAND THAT CRIPPLES: THE EAST GERMAN LABOUR MARKET AFTER REUNIFICATION

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## ABSTRACT

### The Caring Hand that Cripples: The East German Labour Market after Reunification\*

The East German labour market has hardly made any progress since German reunification, despite massive migration flows and support from the West. We argue that East Germany is in trouble precisely because of the support it has received. This paper explores the phenomenon of 'the caring hand that cripples,' arising from bargaining by proxy, the adoption of the West German welfare system and the associated employment persistence. Even the steady decrease of labour cost (normalized by productivity) since the beginning of the 1990s did not help to kick start the East. We suggest that labour force participants fell into 'traps,' concerning low skills, ageing of the workforce, labour-saving capital and skills, capital underutilization, and unemployment arising from the decline of the tradeable sector.

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# 1 Introduction<sup>1</sup>

The East German labor market has made disappointing progress since German reunification. The unemployment rate almost doubled from 1991 to 2004 (from around 10% to 20%), despite massive migration flows from East Germany (EG) to West Germany (WG). This sorry performance may seem puzzling, for East Germans were the envy of their newly-capitalist neighbors. Through reunification, they received well-functioning legal and welfare systems, an orderly privatization process, generous welfare benefits and infrastructure investment - all financed by transfers from WG. These transfers are running at around €80 billion per year (about 4% of Germany's GDP) with no sign of abating; 50% of them constitutes social assistance, e.g. unemployment and retirement benefits. Never before has a region received such immense support in the move to capitalism; but the fledgling has not thrived. What went wrong?

The answer, we will argue, is that the EG labor market is in trouble precisely *because* of the support it has received. This paper explores the phenomenon of "the helping hand that cripples." We view EG as an important case study in the pitfalls to transition, highlighting weaknesses of other European welfare systems.

We argue that the following mistakes were made in East Germany, each disguised as social support.

**Bargaining by proxy:** Right after reunification, EG wage bargaining was primarily in the hands of *West German* unions and employers, rather than their weak and inexperienced Eastern counterparts (e.g. Hans-Werner Sinn, 2002). The Westerners rapidly raised the Eastern wage, in the name of solidarity and equality with the Easterners. In reality, however, Western unions feared migration of workers from East to West and of firms in the opposite direction, resulting in downward pressure on Western wages and employment. Given a low short-run elasticity of labor demand, there was an incentive to raise EG wages.

**Unemployment benefits and associated welfare entitlements:** Through reunification, the East inherited generous unemployment support. This, along with stringent job security provisions and other labor market regulations, also put upward pressure on wages and kept them high (relative to productivity) even once East Germans began to gain control over their own wages.<sup>2</sup>

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<sup>1</sup>We are indebted to Olivier Blanchard, Alfred Boss, Alessio Brown, Gerd Hansen, Gernot Klepper, Henning Klodt, Gerald Krause, Rolf J. Langhammer, Thomas Lontzek, Frank Oskamp, and other IfW researchers for valuable comments. We thank Mariana Heinrich, Gert Pönitzsch, and Ellen Schmieder for extremely helpful research assistance.

<sup>2</sup>Other factors also helped make labor expensive in the East. For instance, the huge *investment subsidies* after reunification naturally raised the price of labor relative to the price of capital. The decision to adopt a *1-to-1 exchange rate* between the East and West German mark after reunification, amounted to a massive appreciation of the EG currency. Yet we will focus on bargaining by proxy, unemployment benefits, job security and regulations, for without them, EG wages could have largely compensated for the investment subsidies and the exchange rate decision.

The post-unification wage hike led to a sharp fall in EG employment. Thereafter, however, Eastern real wages fell relative to productivity. But the employment rate scarcely rose. Why?

**Employment persistence:** Through reunification EG inherited WG labor legislation, including generous job security provisions that raised firing costs and labor regulations that raised hiring costs. Due to these "caring hand" measures, employment became much more persistent (temporary labor market shocks had more persistent after-effects).

Yet employment persistence cannot tell the whole story. It explains why the employment response was sluggish, but not why the Eastern employment rate hardly rose at all. Moreover, EG industrial labor productivity remains about one quarter beneath that in the West even though capital intensity is higher than in the West (e.g. Henning Klodt, 2000).

We will suggest, below, that these phenomena may have arisen because EG labor force participants fell into "traps," concerning low skills, ageing of the workforce, labor-saving capital and skills, capital underutilization, and unemployment arising from the decline of the tradeable sector. These traps were all promoted by the "caring hand" of the West.

We maintain that the problems above extend well beyond East Germany; rather, they appear whenever labor market institutions generate substantial labor turnover costs and permit insiders to exert significant market power in wage determination. Bargaining by proxy is widespread: within firms, insiders (whether formally through unions or through informal understandings) often have an influence on the wages of entrants. Employment persistence arises whenever there are costs of adjusting employment, the labor force, or the size of the insider workforces within firms. The traps are well-known to policy makers everywhere, especially in terms of their consequences (e.g. poverty traps, unemployment traps, low-skill traps). The existence of traps constitute an important reason why labor market reforms often need to be deep (large changes in policy instruments) and broad (involving several complementary measures).

In what follows, Section I presents a model of wage determination and employment persistence, Section II deals with the traps, Section III presents our calibration exercises, and Section IV concludes.

## 2 Wage Determination and Employment Persistence

We present a particularly simple model of the EG labor market, with the following sequence of decisions: first, wages are determined, taking into account their influence on migration and employment; second, migration decisions are made, taking wages as given; and third, firms make their employment decisions, taking wages and migration

as given. We start with the last stage.

## 2.1 Employment

Assume constant returns to labor and let  $a$  and  $\hat{a}$  be labor productivity in EG and WG, respectively. (All WG variables are denoted by  $\hat{\cdot}$ .) There is a random operating cost  $\varepsilon_t$ , iid across workers and time, with a mean normalized to zero and a constant cumulative distribution  $\Gamma(\varepsilon_t)$ . For the wage  $w$ , firing cost  $f$  per worker (constant), firing rate  $\phi$ , and discount factor  $\delta$ , an insider generates the following expected profit:<sup>3</sup>  $\Pi_t = -\varepsilon_t + \sum_{t=0}^{\infty} \delta^t (1 - \phi)^t (a - w) - \delta \phi f \sum_{t=0}^{\infty} \delta^t (1 - \phi)^t$ . The insider is fired when  $\Pi_t < -f$ , so that  $\varepsilon_t > (a - w + (1 - \delta)f) / (1 - \delta(1 - \phi))$ . Thus the firing rate is given by the following implicit function:<sup>4</sup>

$$\phi = 1 - \Gamma\left(\frac{a - w + (1 - \delta)f}{1 - \delta(1 - \phi)}\right) \quad (1)$$

Given a hiring cost  $h$  per worker (a constant), an entrant is hired when  $\Pi > h$ , so that the hiring rate is

$$\eta = \Gamma\left(\frac{a - w - \delta \phi f}{1 - \delta(1 - \phi)} - h\right). \quad (2)$$

The change in employment ( $\Delta N_t$ ) is the difference between the hiring from the unemployment pool ( $\eta U_{t-1}$ ) and the firing from the employment pool ( $\phi N_{t-1}$ ), where  $U_{t-1}$  and  $N_{t-1}$  are the aggregate unemployment and employment levels:  $\Delta N_t = \eta U_{t-1} - \phi N_{t-1}$ . Letting ( $n_t = N_t/L_t$ ) be the employment rate and  $g_t$  be the labor force growth factor ( $g_t = L_t/L_{t-1}$ ), this implies the following *employment dynamics equation*:

$$n_t = \frac{1}{g_t} (\eta + (1 - \eta - \phi) n_{t-1}) \quad (3)$$

and similarly for WG.

In this context, the massive EG wage hike after reunification reduced the hiring rate  $\eta$  and thereby led to a sharply lower employment rate  $n_t$  (due to a downward shift of curve (3)). Furthermore, this EG employment collapse became long-lived since reunification raised the degree of employment persistence. Specifically, the reunification-induced increase in job security (raising firing costs) and labor market regulations (raising hiring costs), reduced the hiring and firing rates ( $\eta$  and  $\phi$ ) and thereby raised the employment persistence parameter  $(1 - \eta - \phi) / g_t$ , *ceteris paribus*.

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<sup>3</sup>In what follows, only those variables have time subscripts that, for given parameter values, actually vary through time in our model.

<sup>4</sup>We assume that  $(\partial \Gamma / \partial \phi) > -1$ , so that a rise in  $(a - w)$  or  $f$  both reduce the firing rate.

## 2.2 Migration

Labor force growth in our model depends only on migration. Assuming for simplicity that household per-period utility is equal to consumption (no disutility of work), migration depends on the difference between the expected present values of income to be earned in East and West.

In equilibrium, an insider's present value in the East is  $V_i = w + \delta((1 - \phi)V_i + \phi V_o)$ , and for an entrant it is  $V_o = b + \delta(\eta V_i + (1 - \eta)V_o)$ , which can be solved for  $V_i$  and  $V_o$ . Assume that EG insiders and outsiders become outsiders in WG. Let  $\widehat{V}_i, \widehat{V}_o > V_o$ , implying migration from East to West.

Workers are heterogeneous in terms of their mobility costs, which are iid across workers and through time. For simplicity, we view the migration cost solely as a congestion-type cost, letting the cost of the marginal migrant be  $\kappa(m_{jt})$ ,  $j = i, o$ ;  $\kappa', \kappa'' > 0$ ; where  $m_{j,t} = M_{j,t}/L_t$ ,  $M_{j,t}$  is the number of migrants  $j$ , and  $M_{i,t} + M_{o,t} = \Delta L_t$ . Setting this cost equal to the gain from migration for the marginal insider and outsider, we obtain the aggregate migration rate:<sup>5</sup>

$$m = g - 1 = \kappa^{-1}(\widehat{V}_o - V_i) + \kappa^{-1}(\widehat{V}_o - V_o). \quad (4)$$

A rise in the EG wage  $w$  (*ceteris paribus*) has countervailing effects: it raises the attractiveness of EG jobs, thereby reducing migration from EG; it also reduces the hiring rate and raises the firing rate in EG, thereby increasing migration. In the calibrated model below, the former effect dominates, so that an EG wage increase reduces migration. This is consistent with the empirical evidence, e.g. see Michael Burda and Jennifer Hunt (2001). A fall in migration, in turn, reduces the growth rate of the WG labor force and thereby increases the WG employment rate (by the WG counterpart of eq. (3)). In short, a rise in the EG wage leads to a rise in the WG employment rate.

## 2.3 Wage Determination

We consider two types of wage negotiations: (i) "self-sufficient bargaining", in which the bargaining parties determine their own wages (the standard wage bargaining framework) and (ii) "bargaining by proxy". We represent WG wage bargaining as self-sufficient. We view EG wages after unification as reflecting both types of wage negotiations, with bargaining by proxy gradually giving way to self-sufficient bargaining with the passage of time.

Under self-sufficient bargaining, let the wage be the outcome of a bargain between each insider and his firm. The wage is renegotiated in each period. Under bargaining agreement, the insider receives the wage  $w$ , and the firm receives the expected

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<sup>5</sup>In the long run, we expect some mechanism to come into operation, so that net migration comes to an end (e.g. equalization of East-West income differentials). Since this tendency has been minor since reunification, we leave it out of our current analysis.



profit  $(a - w)$  in each period. Under disagreement, the insider's fallback income is  $b$ , assumed equal to the unemployment benefit, and the firm's fallback profit is  $-f$ , i.e. during disagreement the insider imposes the maximal cost on the firm (e.g. through strike, work-to-rule, sabotage) short of inducing dismissal. Assuming that disagreement in the current period does not affect future returns, the insider's surplus is  $w - b$  and the firm's surplus is  $a - w + f$ .<sup>6</sup> The negotiated wage maximizes the Nash product  $(w - b)^\mu (a - w + f)^{1-\mu}$ , where  $\mu$  represents the bargaining strength of the insider relative to the firm (assumed equal in EG and WG). Similarly for the WG wage. Thus the negotiated wages are

$$w = (1 - \mu)b + \mu(a + f), \quad \hat{w} = (1 - \mu)\hat{b} + \mu(\hat{a} + \hat{f}). \quad (5)$$

We conceive of bargaining by proxy as a broad-based process, supported by public institutions, involving *all* WG firms and workers (not just the insiders). The bargaining parties are concerned with the EG wage because, as noted, it positively affects the WG employment rate.

A rise in the WG employment rate, in turn, raises the WG workers' payoff and reduces the WG firms' payoff, along the following lines. Let the average incomes of WG outsiders and insiders (per period) be  $\hat{y}_o = \hat{\eta}\hat{w} + (1 - \hat{\eta})\hat{b}$  and  $\hat{y}_i = (1 - \hat{\phi})\hat{w} + \hat{\phi}\hat{b}$ , respectively. Then the average WG worker's bargaining surplus per period  $t + j$  is  $\hat{y}_o(1 - \hat{n}_{t+j}) + \hat{y}_i\hat{n}_{t+j} - \tilde{y}$ , where  $\tilde{y}$  is the fallback income under bargaining disagreement (exogenously given). This surplus rises with the employment rate. For simplicity, let  $\hat{y}_o = \tilde{y}$ , so that the WG worker's per-period surplus reduces to  $(\hat{y}_i - \hat{y}_o)\hat{n}_{t+j}$ . Thus the present value of the worker's surplus is

$$\Lambda_w = \left( (\hat{y}_i - \hat{y}_o) \sum_{j=0}^{\infty} \delta^j \hat{n}_{t+j} \right). \quad (6)$$

Under bargaining agreement, the average firm receives  $\hat{a} - \hat{w} - \hat{f}\hat{\phi}\hat{n} - \hat{h}\hat{\eta}(1 - \hat{n})$  per period; under disagreement, it receives  $-f$ . Thus its surplus per period is  $\hat{\sigma}_a - \hat{\sigma}_n\hat{n}_t$ , where  $\hat{\sigma}_a = \hat{a} - \hat{w} - \hat{h}\hat{\eta} + \hat{f}$  (autonomous surplus) and  $\hat{\sigma}_n = \hat{f}\hat{\phi} - \hat{h}\hat{\eta}$  (induced surplus). We assume that  $\hat{\sigma}_n > 0$ , so that, plausibly, the firm's surplus falls with the employment rate.<sup>7</sup> The present value of the firm's surplus is

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<sup>6</sup>Specifically, the expected present value of returns under agreement are  $V_{i,t} = w_t + \delta((1 - \phi_{t+1})V_{i,t+1} + \phi_{t+1}V_{o,t+1})$  and  $\tilde{\Pi}_t = (a_t - w_t) + \delta((1 - \phi_{t+1})\tilde{\Pi}_{t+1} - \phi_{t+1}f_{t+1})$ , for the insider and the firm, respectively. (Since the wage is renegotiated in each period, the present value in period  $t$  is independent of the present value in period  $t + 1$ .) Since disagreement in the current period does not affect future returns, the present value of returns under disagreement are  $V'_{i,t} = b_t + \delta((1 - \phi_{t+1})V_{i,t+1} + \phi_{t+1}V_{o,t+1})$  and  $\tilde{\Pi}'_t = -f_t + \delta((1 - \phi_{t+1})\tilde{\Pi}_{t+1} - \phi_{t+1}f_{t+1})$ , for the insider and the firm, respectively. Thus the insider's surplus is  $V_{i,t} - V'_{i,t} = w_t - b_t = w - b$  and the firm's surplus is  $\tilde{\Pi}_t - \tilde{\Pi}'_t = a_t - w_t + f_t = a - w + f$ .

<sup>7</sup>In practice, there are of course many other reasons why the firms' surplus falls as the employment

$$\Lambda_f = \sum_{j=0}^{\infty} \delta^j (\hat{\sigma}_a - \hat{\sigma}_n \hat{n}_{t+j}). \quad (7)$$

Thus bargaining by proxy can be expressed in terms of a bargain over the WG employment rate  $\hat{n}_t$ . The Nash product is  $(\Lambda_w)^\mu (\Lambda_f)^{1-\mu}$ , to be maximized with respect to  $\hat{n}_t$ . Since the present values  $\Lambda_w$  and  $\Lambda_f$  are time-invariant, the bargaining solution is time-invariant as well:  $\hat{n}_t = \hat{n}$ . Solving the Nash bargaining problem, we obtain the following target WG employment rate:

$$\hat{n} = \mu \frac{\hat{\sigma}_a}{\hat{\sigma}_n}. \quad (8)$$

The WG bargainers achieve this target employment rate by setting the EG wage  $w$ .

The greater the workers' bargaining strength  $\mu$ , the greater is the WG target employment rate and the higher the EG wage will be set. The lower the migration costs  $\kappa$ , the higher will be the EG wage corresponding to a given WG target employment rate. In this way, our model shows why the EG labor market suffered on account of purported "advantages" of the East Germans - the ability to migrate to the wealthy West and increased bargaining strength bestowed by their Western counterparts.

## 2.4 The East German Labor Market Equilibrium

The EG labor market equilibria are pictured in Fig. 1. The initial employment dynamics line  $E_0E'_0$  (corresponding to eq. (3), with its long-run equilibrium point  $A$ ) is hypothetical: it illustrates EG employment in the absence of the "caring hand". Line  $E_1E'_1$  depicts employment in the immediate aftermath of reunification, reflecting the influence of high wages due to bargaining by proxy and increased employment persistence ( $E_1E'_1$  is steeper than  $E_0E'_0$ ). The employment persistence implies that the wage hike dampens employment gradually (moving from point  $A$  to  $B$  along the dotted line). This is consonant with the fall of the EG employment rate in the first part of the 1990s. Finally,  $E_2E'_2$  describes employment once East Germans will gain direct control over their wages, so that EG wages fall somewhat relative to productivity.  $E_2E'_2$  lies well beneath  $E_0E'_0$  on account of generous

## 3 Traps

While the model helps explain why the EG employment rate fell gradually in the aftermath of unification, it does not shed light on EG's stagnating employment rates. For this purpose, we consider the following labor market "traps":

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rate rises, e.g. firms' costs of searching for workers rise, and firms' fall-back positions deteriorate (since insiders are likely to be more aggressive during bargaining disagreement).

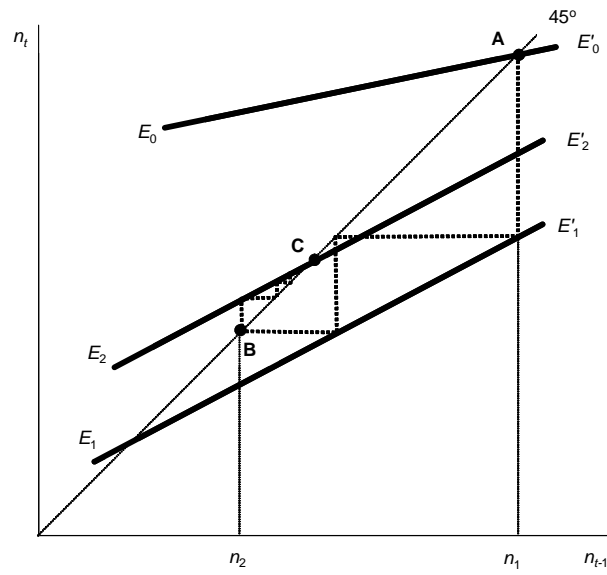


Figure 1: East German Employment

**The low-skill trap:** Due to generous unemployment benefits, associated welfare entitlements, and job security provisions, wages relative to productivity remained particularly high for EG unskilled workers, who thus became especially unemployment-prone. Without jobs, they could not get on-the-job training and become integrated in the workforce, thus falling into a low-skill unemployment trap.

**The ageing trap:** Since the younger workers have a longer time horizon over which they earn wage income, to be set against the fixed cost of migrating, the younger East Germans have had a greater incentive to migrate to the West, where expected income is higher. This incentive was reinforced by the post-unification wage hike: since the elasticity of labor demand is smaller in the short run than in the long run, the wage hike raised wage income more in the short run, i.e. the time span relevant to older workers. Insofar as older workers are less flexible and versatile than their younger counterparts, this may lead to less flexible and versatile capital accumulation. Thereby the East became susceptible to an "ageing trap" in which old skills and old capital dampened labor productivity and thus labor demand.

**The labor-saving trap:** Due to the post-unification wage hike and investment subsidies, it became profitable for firms to invest in labor-saving physical capital. Once this capital was in place, it was of course more difficult to find jobs for East Germany's unemployed. Investment in labor-saving capital raised incentives for workers to acquire the associated "labor-saving labor" skills. The resulting equilibrium, "labor-saving capital-skills trap," economizes on labor, despite high unemployment.

**The "wrong" capital-skills trap:** The vast investment subsidies in EG gener-

ated capital that propped up uncompetitive enterprises and was designed to prevent layoffs in declining industries. Firms had relatively little incentive to avoid underutilization of such capital. This phenomenon provides an explanation for the puzzling phenomenon that labor productivity is generally lower in the East than West, even though capital intensity is comparable or higher. We hypothesize that the "wrong capital" is complementary with "wrong skills", which also tend to be underutilized. The resulting trap helps keep East Germans unemployment-prone and dependent on hand-outs from the West.

**The nontradeable trap:** The massive subsidies from WG triggered a rapid rise of product demand in EG. Thus the prices of nontradables rose, while tradable prices remained perforce unchanged (while "imports" of tradables from West to East rose). This, combined with wage compression between East and West (due to bargaining by proxy, uniformly generous unemployment benefits and job security provisions), caused *real* producer wages to rise much faster in the tradable than the nontradable sector. The resulting reallocation of labor towards the nontradable sector led to higher unemployment in the transition. Some of this unemployment persisted since retraining takes time and many unemployed workers remained jobless due to generous unemployment benefits, lack of on-the-job training, and retraining costs.

While the generation of such traps is analyzed explicitly in Dennis J. Snower and Christian Merkl (2006), here we choose a simple way of incorporating them in our previous analysis. Divide the labor market into an "employment creating" sector (*EC*) and an "employment destroying" sector (*ED*). In the "low-skill trap," skilled labor (with a relatively high employment rate) is in *EC*, whereas low-skilled or unemployed labor is in *ED*. In the "ageing trap," *EC* employs young labor and flexible capital (with expanding labor demand) and *ED* employs old labor and traditional capital (with stagnant labor demand). In the "labor-saving trap," *EC* uses labor-using skills whereas *ED* uses labor-saving skills. In the "wrong capital-skills trap," *EC* employs competitive capital and skills, whereas in *ED* they are defensive.

We now amend the model above by supposing that *EC*-workers have higher productivity than *ED*-workers, but that workers' wages are compressed due to unemployment benefits, firing costs, etc. Then *EC*-workers are more profitable and thus have higher hiring rates and lower firing rates than *ED*-workers ( $\eta_{EC} > \eta_{ED}$ ,  $\phi_{EC} < \phi_{ED}$ ). Suppose that firms give preference to *EC*-workers, employing *ED*-workers only once *EC*-workers are not available. Then the employment dynamics curve has a kink at the initial equilibrium point *A*, as illustrated by the curve  $E_0E'_0$  in Fig. 2.<sup>8</sup>

In this context, the post-unification wage hike shifts the kinked curve downward from  $E_0E'_0$  to  $E_1E'_1$  in the figure. Thus employment falls from  $n_1$  to  $n_2$  (over two periods in the figure). Then the newly unemployed workers  $n_2 - n_1$  lose their *EC*-skills. So the number of *EC*-workers shrinks and the kink moves leftward to  $n_2$ , so that the employment dynamics curve becomes  $E_1E''_1$ .

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<sup>8</sup>The figure assumes, for simplicity, that  $\Gamma'' = 0$ , so that  $\partial\eta/\partial a = -\partial\phi/\partial a$ , and thus the employment persistence parameter is the same for *ED*- and *EC*-workers.

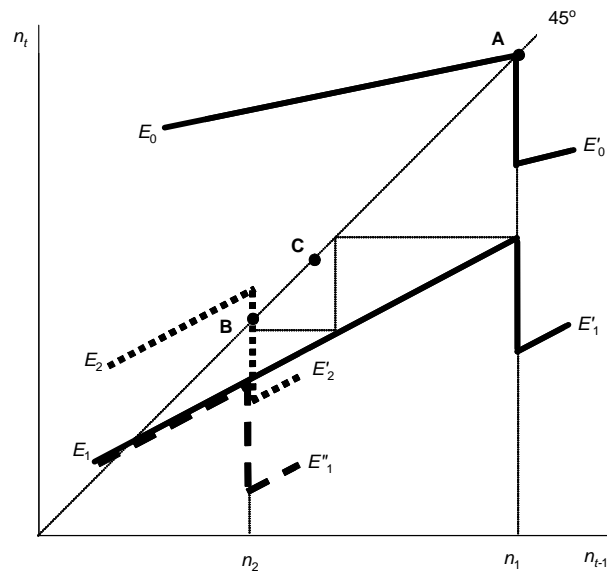


Figure 2: Traps

Finally, suppose that after two periods, the wage falls back partially, as EG gains control over its wage bargaining, so that the employment dynamics curve shifts to  $E_2E'_2$ . Provided that this upward shift is smaller than the size of the kink, then the equilibrium employment rate remains at  $n_2$  point  $B$  (rather than point  $C$ , the final equilibrium in Fig. 1): the labor market is in a "trap."

## 4 Calibration Exercises

We now calibrate the model of Section I to provide a rough picture of how, quantitatively, various elements of the "caring hand" can influence EG employment. Discrepancies between our predictions and actual developments will then shed light on the possible role of traps. (For a detailed account of the calibration, see Dennis Snower and Christian Merkl, 2006.)

We calibrate the hiring and firing rates by (a) setting them to  $\eta = 0.57$  and  $\phi = 0.13$ , respectively, for 2004 and assuming that the actual path converges to the self-sufficient bargaining path within ten years,<sup>9</sup> and (b) calculating all previous values

<sup>9</sup>The estimated average risk of unemployment given employment is about 0.08 for West Germany (Ralf Wilke, 2004). Under a steady state unemployment rate of 10% the firing rate of 8% corresponds to a hiring rate of 72% in our model. The duration of unemployment was 35 weeks in West Germany and 44 weeks in East Germany in 2004 (Statistisches Bundesamt, 2005). Thus we set the hiring rate to 57% in East Germany. Consistent with a steady state unemployment rate of 18%, the firing rate is set to 13%.

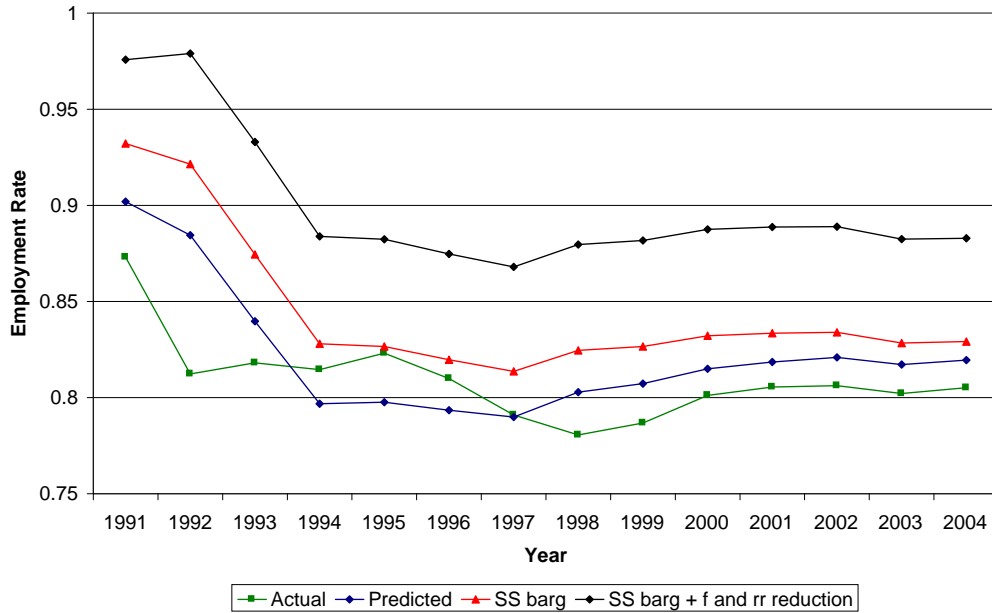


Figure 3: Calibration

recursively, based on the linearized model, and the assumption of perfect foresight over the sample period. Real productivity ( $a$ , gross value added per worker) in 2004 was about €36,000 and wages ( $w$ , measured as real labor costs) were about €22,000. (All estimates are divided by the German GDP deflator, base year 1991.) The firing costs ( $f$ ) are set to 60% of labor costs and the hiring costs ( $h$ ) to 10% of labor costs (see Yu-Fu Chen and Michael Funke, 2003). The replacement ratio (of unemployment benefits to wages) is set at 60%. The real discount rate is 3%, the average real interest rate over the whole observation period. To generate the present values of profit per employee, we assume that productivity, the wage, and hiring and firing costs (all in real terms) grow at 2% in the long-run. The random operating cost also grows at 2%. We endogenize migration by regressing the EG labor market growth due to migration on the derived present value differential of incomes between East and West, and use the estimated coefficients for predictions in the policy exercises.

Fig. 3 shows the actual EG employment rates (excluding job creation programs) and our predicted rates, based on the actual values of wages, productivity, and other parameters. We interpret the predicted employment rates as reflecting a combination of bargaining by proxy and self-sufficient bargaining, with the latter becoming increasingly important through time. Observe that our model predicts a slow improvement of the employment rate since 1997, whereas the actual rate does not do so. This discrepancy could be captured by our trap model.

Next, we use this model to examine how EG employment would have evolved

without various ingredients of the "caring hand." Fig. 3 shows that EG employment rates would have been substantially higher had EG wages been determined solely through self-sufficient bargaining ("SS barg"). To generate EG wages under self-sufficient bargaining, we first derive the annual WG bargaining strength parameter  $\mu_t$  from the wage eq. (5), using annual WG data on  $\widehat{w}_t$ ,  $\widehat{b}_t$ ,  $\widehat{a}_t$ , and  $\widehat{f}_t$ ; then we assume the same  $\mu_t$  for EG, and derive the EG wage  $w_t$ , using annual EG data on  $b_t$ ,  $a_t$ , and  $f_t$ .

Our model suggests that reducing the firing cost and the replacement ratio by 5% would have raised employment substantially further ("SS barg +  $f$  and  $rr$  reduction"). These two policies are complementary in our model. For example, a reduction in the replacement ratio reduces the wage and thereby reduces the firing rate; this gives more leverage to the employment-promoting influence of a reduced firing cost (via wage reduction), since this reduced firing cost and wage is paid over a longer expected job tenure. Such policy complementarities, along with the migration induced by the policies, account for the magnitude of the employment effects.

Including labor market traps in our calibration would of course imply that, in the absence of sufficiently large positive shocks, employment rates would display little tendency to recover from their post-unification trough. In this context, our analysis implies that EG employment rates would have been higher over the past decade if the initial downturn in employment had been less encumbered by the WG "caring hand."

## 5 Concluding Thoughts

This paper provides a sober assessment of the East German labor market problem, suggesting that this problem has been exacerbated by various forms of "care" that the East has received from the West: support in bargaining, unemployment benefits, and job security provisions, in particular.

Our analysis also implies that it is pointless to wait for the problem to disappear of its own accord. In the absence of fundamental policy reform, the damage is permanent, not temporary. The reasons are that (i) even once the East Germans gain control over their own wages, the resulting wage negotiations - based on generous unemployment benefits and job security provisions - will still generate wages that are high relative to productivity and (ii) the resulting unemployment can become perpetuated through various labor-market traps. Without a policy reform package that is "deep" (radically improves employment incentives) and "broad" (a range of complementary measures),<sup>10</sup> East Germany is likely to remain dependent on the caring hand that cripples.

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<sup>10</sup>See, for example, David Coe and Dennis J. Snower (1997).

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