

The Caring Hand that Cripples: The East German Labor Market After Reunification*

Dennis J. Snower and Christian Merkl[†]

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The East German labor market has made disappointing progress since German reunification. The official unemployment rates in the East have risen steadily since 1995. The rate now stands at about 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. Transfers from East to West are running at around €80 billion per year (about 4% of Germany's GDP). 50% of these transfers alone constitutes social assistance, e.g. unemployment and retirement benefits. The transfers show no signs of abating. Never before has a region received such immense support in the move to a capitalist system; 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. WG employers feared the competition from new firms that the migration would bring. Given a low short-run

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[†]Kiel Institute for World Economics (IfW), Christian-Albrechts University, Kiel.

elasticity of labor demand, both WG parties had 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.

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 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: Reunification also implied an institutional union, whereby the East inherited WG labor legislation, including generous job security provisions and costly labor regulations that raised hiring costs. Due to these "caring hand" measures, employment (and unemployment) 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, despite a rapidly declining labor force. Moreover, EG industrial labor productivity remains about one quarter beneath that in the West even though capital intensity and the age of the capital stock are similar to the West (e.g. Henning Klodt, 2000).

We will suggest that these phenomena may have arisen because EG labor force participants fell into various "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. Unemployment 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.

I 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.

A 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 ε_t , iid across workers and time, with a constant cumulative distribution $\Gamma(\varepsilon_t)$. For the wage w , retirement rate r , firing cost f per worker (constant), and firing rate ϕ , an insider generates the following expected profit:¹ $\Pi_t = (a - w - \varepsilon_t) + \sum_{t=1}^{\infty} \delta^t (1 - \phi - r)^t (a - w) - \phi f \sum_{t=0}^{\infty} \delta^t (1 - \phi)^t$. The insider is fired when $\Pi_t < -f$, so that $\varepsilon_t > (a - w + (1 - \delta + \delta r) f) / (1 - \delta(1 - \phi - r))$. Thus the firing rate is given by the following implicit function:²

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

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

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

The change in employment (ΔN_t) is the difference between the hiring from the unemployment pool (ηU_{t-1}) and the firing from the employment pool (ϕN_{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 be the labor force growth factor ($g = L_t/L_{t-1}$), this implies the following *employment dynamics equation*:

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

and similarly for WG.

This equation illustrates how German reunification, in promoting job security (raising firing costs f) and labor regulations (raising hiring costs h), increased EG employment persistence ($((1 - \eta - \phi)/g)$), for given wages w . Thus a recession (due, say, to a temporary drop in the productivity parameter a) has more persistent after-effects on the employment rate. Furthermore, observe that a wage hike (induced through unification, as shown below) reduces the hiring rate η , and thus shifts the employment dynamics curve (3) downwards, leading gradually to a lower employment rate.

B 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 $V_i = w + \delta((1 - \phi - r)V_i + \phi V_o)$, and for an entrant it is $V_o = b + \delta(\eta V_i + (1 - \eta - r)V_o)$, 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:³ $m = g - 1 = \kappa^{-1}(\widehat{V}_o - V_i) + \kappa^{-1}(\widehat{V}_o - V_o)$.

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)).

C 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 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 $a - w + f$.⁴ The negotiated wage maximizes the Nash product $(w - b)^\mu (a - w + f)^{1-\mu}$, where μ represents the bargaining strength of the insider relative to the firm. Similarly for the WG wage. Thus the negotiated wages are

$$(4) \quad w = (1 - \mu)b + \mu(a + f), \quad \hat{w} = (1 - \mu)\hat{b} + \mu(\hat{a} + \hat{f})$$

Under bargaining by proxy, the EG wage is conceived as a bargain between all WG workers and firms. The bargaining parties are concerned with the EG wage, because it affects WG employment. As noted, a rise in the EG wage increases 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 $\Lambda_w = \left((\hat{y}_i - \hat{y}_o) \sum_{j=0}^{\infty} \delta^j \hat{n}_{t+j} \right)$.

Under bargaining agreement, the average firm receives $\hat{a} - \hat{w} - \hat{f}\hat{\phi}\hat{n} - \hat{h}\hat{\eta}(1 - \hat{n})$; 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.⁵ The present value of the firm's surplus is $\Lambda_f = \sum_{j=0}^{\infty} \delta^j (\hat{\sigma}_a - \hat{\sigma}_n\hat{n}_{t+j})$.

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 Λ_w and Λ_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:

$$(5) \quad \hat{n} = \mu \frac{\hat{\sigma}_a}{\hat{\sigma}_n} (\hat{y}_i - \hat{y}_o)$$

The WG bargainers achieve this target employment rate by setting the EG wage w (the greater is \hat{n} , the higher must w be).

The greater the workers' bargaining strength μ , the greater is the WG target employment rate and the higher the EG wage will be set. The lower the migration costs κ , 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 power bestowed by their Western counterparts.

D 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 $E_1E'_1$ shows employment under bargaining by proxy (high wages) and social union (high unemployment benefits and high hiring and firing costs). Observe that $E_1E'_1$ is steeper than $E_0E'_0$ since firing costs increase employment persistence. On account of this persistence, it takes the initial wage hike some time to fully affect employment (illustrated by the gradual movement from A to B in the figure). 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 unemployment benefits and firing costs. Consequently the employment rate rises somewhat, but then remains stuck at a high level (at point C).

[Insert Figure 1 here]

II Traps

While the model helps explain why the EG unemployment rate rose gradually in the aftermath of unification, it does not shed light on EG's stagnating employment and unemployment rates since 1998. For this purpose, we consider the following labor market "traps":

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 "old skills/old capital trap", which adversely affected 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 generated 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 nontradable trap: The massive subsidies from the West triggered a rapid rise of product demand in the East. 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 Snower and 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 and that unions compress these workers' wages; for simplicity, let their wages be equal. 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 no EC -workers are available. Then the employment dynamics curve has a kink at the initial equilibrium point A , as illustrated by the curve $E_0AE'_0$ in Fig. 2.⁶

[Insert Figure 2 here]

In this context, the post-unification wage hike shifts the kinked curve downward from $E_0AE'_0$ to $E_1AE'_1$ in the figure. Thus, the employment rate falls from n_1 to n_2 . This change affects the characteristics of the workforce: the newly unemployed workers $n_2 - n_1$ lose their on-the-job training in EC -skills. Consequently, the number of EC -workers shrinks and the kink moves leftward to n_2 .

Finally, when the wage falls back partially, as the East Germans gain control over their wage bargaining, the employment dynamics line shifts to $E_2AE'_2$. Provided that this upward shift is smaller than the size of the kink, then the equilibrium employment rate remains at point B (rather than point C , the final equilibrium in Fig. 1): the labor market is in a "trap."

III 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. (A detailed description of the calibration and other aspects of our model is given in 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 thereafter,⁷ and (b) calculating all previous values recursively, based on the 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 real labor costs (w) were about €21,500. (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 7% of labor costs (see Yu-Fu Chen and Michael Funke, 2005). The replacement rate 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) in our model grow at 2% in the long-run. The random operating cost also grows at 2%. We endogenize migration by regressing the derived present values of incomes on the EG labor market growth due to migration, 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. Note that the predicted rates underestimate the actual rates somewhat for part of the early 1990s. Yet in this period there were many additional sources of hidden unemployment besides job creation programs (e.g. discouraged workers, short-time work, training schemes, see Fuchs and Weber, 2005), which prevented a further employment drop and which are not captured in our simple model. Also 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.

[Insert Figure 3 here]

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 μ from the wage eq. (4), using annual WG data on w , b , a , and f ; then we assume the same μ for EG, and derive the EG wage, using annual EG data on b , a , and f . The slow convergence of the predicted employment rate to that under self-sufficient bargaining is due to wage persistence (actual EG wages are still well above those our model predicts under self-sufficient bargaining⁸) and employment persistence.

Furthermore, our model suggests that reducing the firing cost and the replacement ratio (the ratio of unemployment benefits to wages) 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, since this reduced firing cost and the associated reduced 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 much higher over the past decade if the initial downturn in employment had been less encumbered by the WG "caring hand."

IV 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),⁹ East Germany is likely to remain dependent on the caring hand that cripples.

V References

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Notes

¹In what follows, only those variables have time subscripts that, for given parameter values, actually vary through time in our model.

² $\Pi_t < -f$ implies that $\varepsilon_t > (a - w + (1 - \delta + \delta r) f) / (1 - \delta(1 - \phi - r))$. We assume that $(\partial \Gamma / \partial \phi) < 1$, so that an increased firing cost and a reduced wage both reduce the firing rate.

³In the long run, we expect some mechanism (e.g. equalization of East-West income differentials) to come into operation, so that net migration comes to an end. Since this tendency has been minor since reunification, we leave it out of our current analysis. Below, we calibrate our model so that long-run net migration is zero.

⁴Specifically, the present value of returns under agreement are $V_{i,t} = w_t + \delta((1 - \phi_{t+1} - r)V_{i,t+1} + \phi_{t+1}V_{o,t+1})$ and $V_{f,t} = (a - w_t) + \delta((1 - \phi_{t+1} - r)V_{f,t+1} - \phi_{t+1}f)$, 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 $V'_{i,t} = b + \delta((1 - \phi_{t+1} - r)V_{i,t+1} + \phi_{t+1}V_{o,t+1})$ and $V'_{f,t} = -f + \delta((1 - \phi_{t+1} - r)V_{f,t+1} - \phi_{t+1}f)$, for the insider and the firm, respectively. Thus the insider's surplus is $V_{i,t} - V'_{i,t} = w - b$ and the firm's surplus is $V_{f,t} - V'_{f,t} = a - w + f$.

⁵In practice, there are of course many other reasons why the firms' surplus falls as the employment 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).

⁶The 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.

⁷The 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, assuming a unit distribution, 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%.

⁸In 1991, actual wages were €13,200, while wages under self-sufficient bargaining in our model were €8,800 (in 1991 prices); in 2004, these wages were €21,500 and €19,700, respectively.

⁹See, for example, David Coe and Dennis J. Snower (1997).

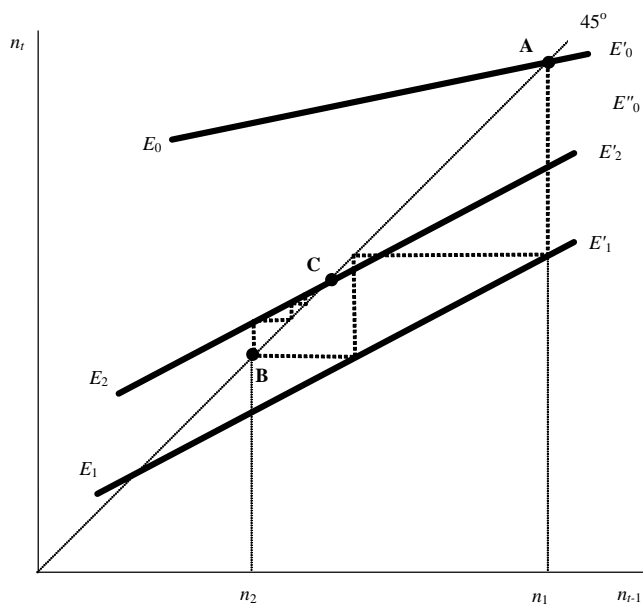


Fig. 1: East German Employment

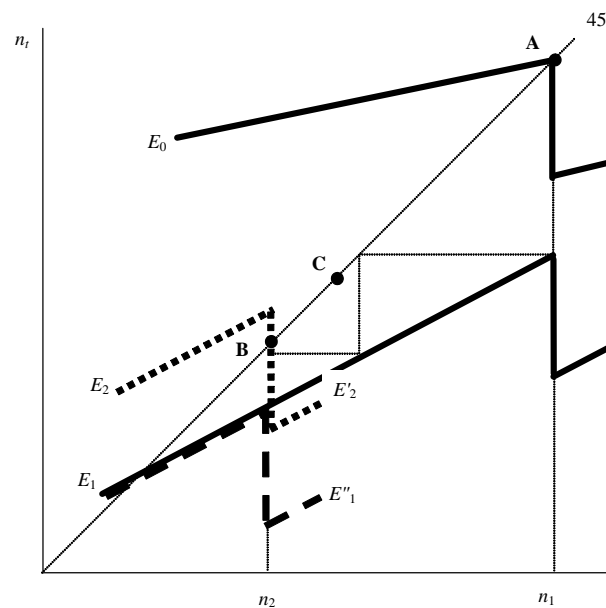


Fig. 2: Traps

Employment Rate

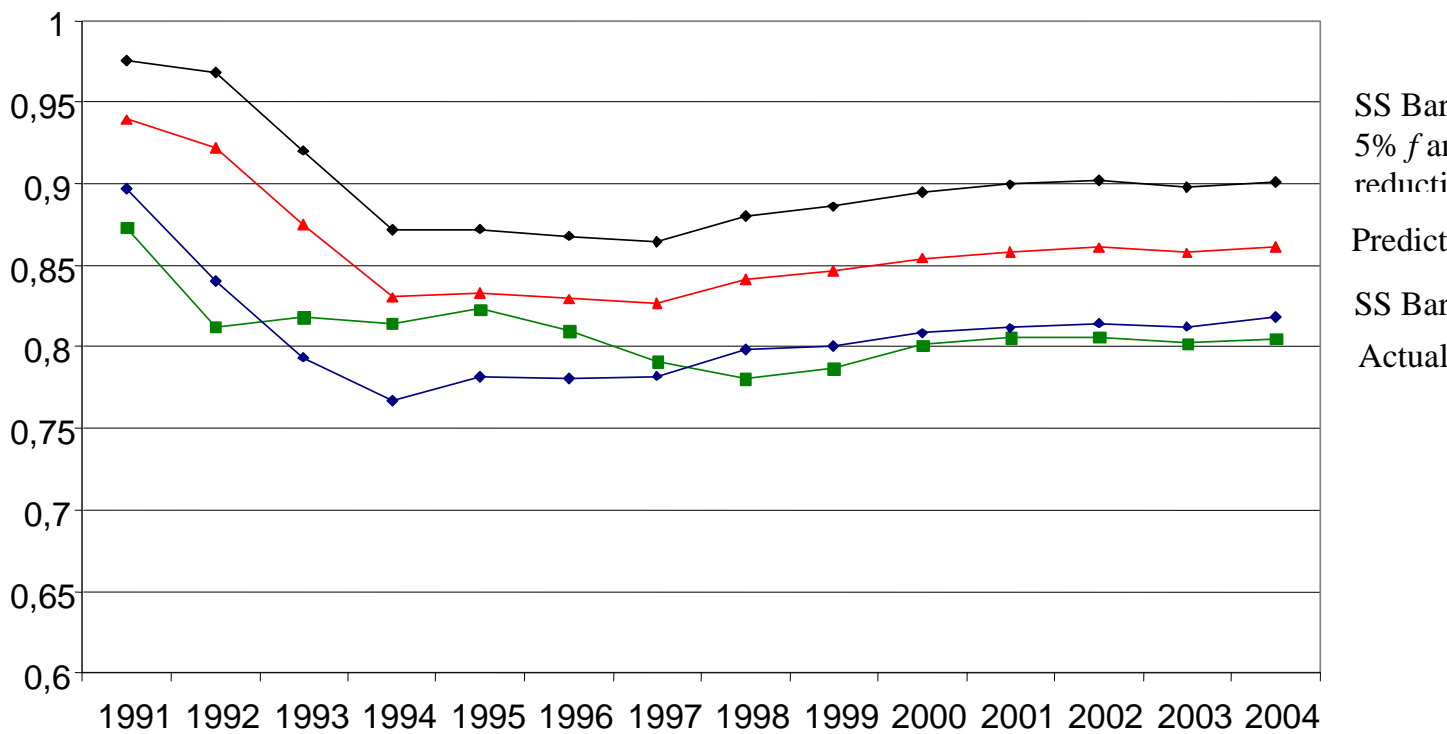


Fig. 3: Calibration Exercises