

Industry Rents, Skills and Experience in Germany and the U.S. – Does the Evidence Support the Insider-Outsider Theory?

Joachim MÖLLER #
Alisher ALDASHEV

Institut für Volkswirtschaftslehre einschl. Ökonometrie, Universität Regensburg
Universitätsstraße 31, D-93053 Regensburg, Germany

University of Regensburg
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Abstract

Using an earnings function approach, the paper analyzes inter-industry wage differentials in Germany and the U.S. for the time period 1984 – 2001. In contrast to previous studies, we do not assume that the effect of experience on earnings is the same across industries. Following St.Paul (2004) we construct indicators of rents for different experience/ skill groups. Our results indicate that in general rents are higher in Germany relative to the U.S. In the United States the rents followed a declining trend for all groups considered. In Germany the rents have been going up over time or were stable. We argue that the Insider-Outsider theory implies that industry rents should increase with experience and skill level. However, the evidence is in discord with this view.

Keywords:

Inter-industry wage differential, rents, Insider-Outsider theory, comparison Germany-U.S.

JEL-classification: J31

Correspondence to: Prof. Dr. Joachim Möller, Department of Economics, University of Regensburg, Universitätsstraße 31, D-93053 Regensburg, Germany, E-mail: joachim.moeller@wiwi.uni-regensburg.de, phone: +49 (941) 943-2550, fax: +49 (941) 943-2735. We would like to thank Florian Lehmer and Thorsten Vogel for very helpful comments. All remaining errors are our own. Financial support from the German Science Foundation (*Deutsche Forschungsgemeinschaft*, Projekt MO 523/ 3-2) within the “Schwerpunktprogramm 1169: Flexibilisierungspotenziale bei heterogenen Arbeitsmärkten” is gratefully acknowledged.

1 Introduction

The differences in (un)employment rates in Germany and the U.S. have been thoroughly investigated by many studies. While average standardised unemployment rates in Germany were typically lower in the seventies and eighties, the U.S. labor market has been outperforming the German market at least since the mid-nineties (see, among others, Salverda et al. 2005). A simple inspection of the time series reveals a striking difference in the dynamic behaviour of unemployment. While the abrupt jumps in the unemployment rate at the time of the oil price shocks in the mid-seventies and the early eighties are quite parallel between the two economies, the development afterwards is markedly dissimilar.

In the U.S. the shocks in unemployment have readily been overcome. In Germany they have been much more persistent. This *ratchet effect* has been often described (e.g. Franz 2005). The effect implies that adjustment is asymmetric. The rise in unemployment occurs more or less immediately after the exogenous shock, while the recovery is extremely sluggish. The phenomenon – which has high economic policy relevance – requires explanation. The ratchet effect is likely to be linked to path-dependency and hysteresis in dynamic adjustment models. Temporary shocks appear to have long-run effects. Formally, this means that the equilibrium the economy adjusts to depends on initial conditions (*history matters*). Hence the non-accelerating rate of unemployment (NAIRU) is not unique given a set of structural variables characterising the economy.

In the early nineties, there were two prominent approaches that explained path-dependency of the “natural” or quasi-equilibrium unemployment rate: the deterioration-of-human-capital hypothesis and the Insider-Outsider-Hypothesis (Lindbeck and Snower 1988a, 1988b). The first hypothesis starts from the observation that longer spells of unemployment are likely to erode the productive capacity of workers. Several mechanisms play a role in this context. First, in a

world of rapid technological and organisational change, the knowledge of workers will be quickly outdated if workers are excluded from the productive process. Second, long-term unemployment affects the attitude towards job search and active participation in the labor market (habit formation). Third, there might be a lack of incentives to reintegrate into the production process if many others are unemployed (see Heining and Lingen 2005, Hedström et al. 2003) A *culture of unemployment* develops and hinders the economy to regain the pre-shock equilibrium. The basic argument is that the total number of unemployed affects the individual's utility function (if more people are unemployed he/she feels better about being unemployed himself/herself).

The focal point of the present paper is the Insider-Outsider Hypothesis. The central topic of this approach is the wage formation process. The basic idea is that the incumbent work force dominates wage formation. Insiders are workers belonging to the core group of employees who are highly protected against layoffs. Outsiders are the unemployed or those in marginal employment. Outsiders intend to become insiders because of higher earnings and other amenities of those in core employment groups. To get the status of an insider, outsiders would even accept lower wages than those earned by insiders. Their interest is not or only a moderate increase in wages during an upswing, because this would foster higher employment. Increasing the number of insiders is, however, not in the interest of the incumbent workforce. If they have the possibility to do so, then insiders would increase wages in a recovery period, thereby hindering employment to expand markedly. The optimisation problem of a representative insider is to maximise the wage without jeopardizing his/her own job. The solution to this problem is to demand a real wage which is equal to the product of the marginal insider. Of course, this wage exceeds the marginal product in case of full employment.

Why are insiders able to demand wages that exceed the market-clearing level? The *market power* of insiders relies on the difference in value of continuing the *status quo* for the employer and his/ her fall-back position. The fall-back position of the employer is to layoff in-

siders and to hire outsiders. Hiring outsiders, however, involves three sorts of costs: search costs, training costs and the costs for lay-offs of the former insiders. Because of the existence of these costs, incumbent workers can expropriate at least some of the difference. Some of the power of insiders lies in their accumulation of firm-specific human capital. As Gilles Saint Paul (2004:3) in a recent contribution puts it:

The insider-outsider theory tells us that firms have sunk specific investments in locating and training workers, which generates a hold-up problem. Once the investment is paid for, the worker can expropriate part of it by asking above-market clearing wages.

The possibilities of rent expropriation become more favorable the higher is employment protection and the lower is the degree of competition on the goods markets. In standard models it is easy to show that the mark-up over the market-clearing wage depends inversely on the price elasticity of demands.

2 Measurement concepts

2.1 Re-interpreting inter-industry wage differentials (*Saint-Paul 2004*)

It lies at hand to consider wage differentials across industries for analysing rents. In their pioneering work on interindustry wage differentials, Krueger and Summers (1988) have established the existence of marked interindustry differentials. The authors interpret these differentials as evidence of the efficiency-wage theory.¹ Industries might differ, for example, in their ability to monitor work effort. In order to set incentives and to create a threat potential of lay-off, industries with unfavourable monitoring possibilities have to pay higher wages. The study by Krueger, Summers (1988) have initiated a strand of literature on this topic. The result of these contributions is that the phenomenon of inter-industry wage differentials is robust with respect to the consideration of unobserved heterogeneity of workers.² The amount to which these differentials can be observed differs across countries. Former empirical studies have shown that Sweden has relatively small differences compared to the U.S. (Edin and Zetterberg

¹ See Schlicht (1978), Shapiro, Stiglitz (1984), Solow (1979).

² See Gibbons and Katz (1992) and Katz and Summers (1989).

1992). Bellmann and Möller (1995) find higher differentials for the U.S. than in Germany, but the difference shrinks over time. Moreover, industry differentials tend to be correlated between countries.³ There are also correlations between differentials for different skill groups in the same industry. (Möller 2001) The latter result does not support the view that at least the shirking version of efficiency wage theory does not provide a comprehensive explanation of interindustry wage differentials. For instance, it does not seem very plausible that if the effort of a production worker in a specific industry is costly to monitor, the same should be the case for a white-collar worker in the same industry. The correlation between industry differentials across skill groups is therefore an argument for alternative explanation like rent-sharing in combination with fairness standards.

Studies using information of exogeneous causes of inter-sector mobility like Gibbons and Katz (1992) have shown that inter-industrial wage differentials cannot predominantly be caused by unobserved ability of workers. After exclusion of further alternatives, rent-sharing might be an explanation of the stylised facts. *Saint-Paul* (2004) therefore draws the conclusion that “...(inter-industry wage differentials, J.M.) are correlated with a number of industry characteristics such as union density, capital intensity, product market competition, and so on, that are likely to be associated with the rent that can be extracted by workers and their power to do so. In other words, there is a strong presumption that differences in wages between industries are differences in rents rather than anything else.”

This fresh look at interindustry wage differentials is the starting point for our own study. Building on this presumption, inter-industry wage differentials for observationally equivalent workers can be used for constructing an indicator of rents. Assume that industries differ in their possibility of rent extraction. The industry with the lowest pay for a specific type of workers is the one which is closest to perfect competition. Taking this industry as a reference case offers the possibility of constructing a measure of rents that characterise an economy.

³ See Wagner (1990) who compares five countries and Bellmann, Möller (1995).

The first indicator is simply the absolute or relative difference between the highest and lowest level of pay for observationally equivalent workers:

$$SPREAD_t := \max_i c_{it} - \min_i c_{it}, \quad (1)$$

where c_{it} is the coefficient of a (0,1)-dummy variable for industry i at time period t in the estimates of an adequately specified earnings equation.

The second indicator proposed by St.Paul (2004) is an indicator of the average rent in economy constructed by using employment weights:

$$AR_t = \sum_{i=1}^I \omega_{it} \left(c_{it} - \min_j c_{jt} \right) \quad \text{with } \omega_{it} := \frac{n_{it}}{\sum_{i=1}^I n_{it}}. \quad (2)$$

One should stress that the two indicators measure different aspects. The first measure is heavily dependent on extreme cases. If, for instance, a small industry with very special conditions pays rather high wages while all other industries are more or less close together, the measure would indicate a high level of rents in the economy which is actually not the case. The second indicator is therefore more adequate to depict the overall situation in the economy.

Of course, the construction of the indicators has some weaknesses. It depends on the quality of measurements for the reference industry. If these measurements are contaminated, the rent indicator would be affected. The spread indicator is also affected by the quality of measurement for the industry with highest rents. The weighted indicator is less sensitive to measurements in single industries.

A further question is the extent of disaggregation. If unnecessarily highly aggregated, the industry-specific differences could be averaged out. A too fine measure, on the other side, would be prone to measurement errors because of too few observations.

Since the scientific-use file for the German data contains information on 16 aggregated industries we have chosen a rather high aggregation of industries. In general a broader classification tends to hide differences between industries. However, we show in the following that

even using this classification scheme, we can conclude that significant inter-industry wage differentials exist in Germany and the U.S.

The aim of our paper is to use reliable micro data sets to investigate the differences in inter-industry wage differentials between Germany and the U.S.⁴ In contrast to the work of St. Paul, we stress the importance of difference not only in skill but also in experience remuneration across industries. The reason behind is assumption that high-experienced workers are more costly to replace than low-experience workers (higher training costs, on-the-job training). Another argument is that, for example in Germany, protection against layoff as well as severance payment typically increases with age, which gives more insider power to workers with more years of experience. Then one may conclude that high-experience workers have higher insider power than low-experience workers. According to Insider-Outsider hypothesis, inter-industry differentials are explained by rents gained by insiders. If this hypothesis is adequate in explaining these differentials then rent indicators should be higher for high-experience workers and lower for unexperienced and higher for skilled than for unskilled.

3 Data issues

3.1 Data Sources

We use two large micro-data sets, IABS⁵ for Germany and the CPS outgoing rotation group for the U.S. IABS is a 2% random sample of all employees who contribute to the social security system in Germany. It covers the years 1976 to 2001. The data set does not include civil servants, those in marginal employment except 1999-2001, students enrolled in higher educa-

⁴ In a companion paper (Möller 2005) we investigated other possible causes of inter-industry wage differentials. Differences in remuneration of different industries might for example be explained as compensations for bad working conditions, career chances or high job instability. As studies from other authors have shown, the first two factors are not able to explain the facts. If it comes to compensation for job instability, for example, we can show that wage differentials are positively correlated with employment duration thereby ruling out the corresponding compensation hypothesis.

⁵ See Bender and Haas (2002).

tion and family workers. Being the basis for social security payments the earnings information is highly reliable. Because we are interested in long-run developments the investigation is constrained to pre-unification Germany. The wage variable gives daily gross earnings calculated as averages over the observed employment period for every person and year. For our study all employees who were employed at the 30th of June of each year were selected. Workers in an apprenticeship or volunteers were excluded. The qualifications of workers in the sample can broadly be separated into three broad categories applying ISEC codes as far as possible: (i) low-skilled: persons with a lower schooling level and no further occupational qualifications completed; this group includes lower and intermediate secondary school graduates who did not complete an apprenticeship or graduate from a full-time vocational school; (ii) skilled: persons with an occupational qualification, which might be either a completed apprenticeship or graduation from a vocational school⁶; (iii) high-skilled: persons holding a secondary school leaving certificate and a degree for university or polytechnics type of higher education.⁷ A certain drawback of the data is that data are top-coded. This is due to the ceiling for social security contributions in the German social security system.

A certain problem with IABS is that there was a major change in definition of earnings in 1983.⁸ A further drawback is that information on working hours is available through a qualitative variable only.

The US data are from the Current Population Survey (CPS), which is a monthly survey of 50,000-60,000 households, conducted by the Bureau of the Census for the Bureau of Labor Statistics. The CPS asks individual household members (or proxies) detailed questions about their labor force status. The answers are the primary basis for many official US labor statistics. The particular version of the CPS data analyzed here is the Economic Policy Insti-

⁶ We excluded *Meister* from this group and put them into high-skill group.

⁷ Of course, a certain discrepancy remains in the definition of skills (see, Freeman, Schettkat (2001) for a closer inspection of equivalent definitions of skill variables in Germany and the U.S.

⁸ Before this date special gratifications were not included. Since these extra payments are quite substantial and vary across different groups of workers, this re-definition caused a structural break. See for more details Steiner, Wagner (1990).

tute's (EPI) extract of the "Outgoing Rotation Group" (ORG) of the CPS (see Webster, 2000, and Gao, 2003, for more thorough descriptions). The ORG is a one-quarter subset of the CPS that, in addition to answering detailed questions about their labor market situation has, since 1979, also provided information on earnings from work.⁹

From 1992, the CPS changed its procedure for measuring education. Before 1992, the CPS asked respondents for the total years of education (and whether they had completed their last year or not). From 1992, however, the CPS focused on educational attainment, rather than years of schooling. The data here follow Jaeger's (1997) procedure for producing a broadly consistent education series across the two definitions.

3.2 Harmonization of the data

A sensible comparison of micro-data evidence for different countries requires a careful harmonization of variables. Since the German data set is the most restrictive one, it was taken as a base-line. Several adjustments were necessary to render the U.S. data as similar as possible to the German data. First, self-employed were excluded from the U.S. data since information on these group of workers are not available for Germany. Second, because IABS contains only qualitative information on working time, all comparisons were based on daily earnings, not on hourly wages. To control for the effect of part-time, the two variables PT_1 and PT_2 being included in the German data set were accordingly constructed from usual working hours information in the CPS survey.¹⁰ Third, (potential) experience of workers was generated applying the same principles for both countries.¹¹

Another big issue in harmonizing the two datasets was difference in industry classification. In IABS the industries were aggregated into 16 broad categories (see table 1 for details) whereas in the CPS they were assigned into 48 categories. Since CPS classification is more

⁹ More details about the CPS dataset are given in Appendix 1

¹⁰ The first variable indicates working hours with less or equal the half of usual full-time hours. The second variable describes working hours between half and full-time working hours.

¹¹ Experience (*EXP*) was defined as age minus average years of schooling and further qualification minus 6.

detailed we tried to impose German classification onto CPS categories. This left us up with 15 broad classes (in German data “construction” was split into two categories whereas in the US data “construction” was just one category). Details are given in appendix 2.

A problem present in both datasets is implausibly low estimates of earning for some workers, which could be attributed to reporting errors or minor employment. As it was put by Schmitt (2003: 7)

Despite nearly universal coverage of the minimum wage, for example, a substantial share of workers report hourly wages below the minimum wage in every year of CPS data. Some of these are workers who report a wage that is equal to the minimum wage minus the "tip credit" applied to workers who usually receive tips as a part of their compensation.

In Schmitt (2003) one may find that also some non-hourly workers report weekly wages which, when divided by reported hours of work, yield over a \$100 per hour. Closer inspection reveals that most of those workers are employed in industries where such wages are extremely rare, which might indicate reporting errors.

For the top coding of the US data we used the ceiling utilized in the CPS dataset. Bottom coding poses a more difficult obstacle. For the present analysis it was needed to exclude workers with implausibly low wages to discard misreported wages and sort out those workers holding a minor job. The bottom coding to identify minor employed is given in the IABS-REG, but not in the CPS data. As an attempt to make the two datasets comparable we translated the currency units in both datasets into PPP¹² dollars and imposed the bottom code of German data (*Geringfügigkeitsgrenze*) on the CPS dataset. Workers earning wages below the bottom limit were excluded from the sample.

¹² Data taken from www.imf.org

4 Estimation

The basic equation estimated in previous work (St. Paul 2004) is

$$\ln w_i = a_0 + a_1 EXP_i + a_2 EXP_i^2 + \sum_{j=2}^{15} d_j DIND_{ij} + \varepsilon_i \quad (3)$$

This approach assumes that the coefficient of experience and experience squared are identical across industries. We tested this assertion and rejected it for both countries at a very high level of significance. Hence we conclude that experience rating markedly differs between industries. Having found this, one has to modify the concept of measuring industry rents. Rents could be specific to groups defined by age or experience. Therefore, we decided to use a more general estimation approach than eq. (3) which allows for industry-specific effects on experience and experience squared. We then calculated the average earnings for groups of workers with 0, 5, 20 and 35 years of experience and based our rent indicators on these different groups of workers.

We first present St. Paul's two alternative rent indicators for a group with 20 years (potential) experience. In 1995, the real daily earnings of U.S. male skilled workers ranged between about 76 dollars¹³ in retail and household services and more than 96 Dollars in the steel/ car producing industry. In Germany household services are also the lowest paid industry with gross earnings (including taxes and social contributions) of almost the same amount as in the US (76 dollars). The highest earnings in German industries are found for business services (roughly 106 dollars). Comparing the spread between the lowest and highest paying industry in the two countries, gives the result shown in figure 1. The figure shows that the indicator for both countries started from about the same level in 1984. In relative terms, the spread was about 40 percent in the U.S. and about 35 percent in Germany at the beginning of the observation period. Since then, the rent indicator for the U.S. has followed a declining trend, while it

¹³ In the following all earnings for the U.S. and Germany are calculated in PPP-adjusted 2000-US-Dollars.

was quite stable for Germany. In 2001, the spread for the U.S. was about 25 percent, only, compared to about 35 percent for Germany. Hence the first measure of rents would indicate that rents for male workers of the intermediate skill group have markedly fallen over time. Considering the group of workers with 35 years of experience, we find that the spread has been falling in both countries. All values of this rent indicator are smaller for Germany. However, since the negative trend was stronger in the U.S., the gap has been more or less closed.

For the less experienced workers we find that the indicator in the two countries has developed more or less parallel up to the early nineties. In 1993, the earnings of young males with five years of experience in the best-paying industry are about 50 percent higher than in lowest-paying industry in both countries. After then the evolution the measure for the U.S. and Germany are diverging. While the spread for the U.S. has declined to about 35 percent in 2001, in Germany it has increased slightly to roughly 53 percent.

To summarize the findings for the spread measures, we have a declining trend in this indicator in the U.S. for all groups considered, while in Germany this measure of rents has been stable or even increasing. At the end of the observation period, the spread in Germany is always higher than in the U.S. in all cases but the high-experience group.

We now turn to the second measure of rents which gives a more comprehensive picture of changes in the inter-industry wage structure. *Figure 2* corroborates the findings from above showing that all rent indicators for the U.S. follow a declining trend, while an increasing – or for the highest experience group stable trend – prevails for Germany. At the end of the observation period, the indicator of rents in Germany compared to the U.S. is higher for low and intermediate experience and more or less similar for the highest experience group.

So at this stage one can conclude that especially workers with low and intermediate levels of experience have increased their possibilities to extract rents in Germany. According to both St. Paul's indicators the importance of rents has been reduced markedly in the U.S.

We also constructed rent indicators for low-skill male workers. Figure 4 shows that in Germany the spread measure for experience groups 20 and 35 has gained a bit (although the trend is rather flat). For low-experienced workers (5 years of experience) the spread has been going up from about 55% in 1984 to about 72% in 1992 and has dropped to roughly 50% in 2001. In the USA the spread measure for experience groups 20 and 35 has also been quite stable (but with a negative slope) whereas the spread for the low experience group has lost about 10 percentage points from 1984 to 2001. But what is striking is the magnitude. The spread measure for low experience group in Germany is on average about 60% whereas it is roughly 25% in the US! The rent measure for workers with 20 years of potential experience is about 48% and 20% in Germany and United States respectively. For workers with 35 years of experience the difference between Germany and USA is less prominent. The indicator has the value of about 35% and 22% for Germany and United States respectively. Figures 3 and 4 give a comprehensive graphical presentation of these results.

As we formulated our hypothesis before we would expect to witness higher measure for insider power for more experienced workers. This is not what we see in figures 3 and 4. On the contrary, it turns out that the measure for insider power clearly falls with experience for Germany. For the US the differences in insider power indicator between the experience groups are only marginal. It is also evident from figures 3 and 4 that the rent indicators are markedly higher for low-skilled workers than for skilled for Germany. For the US the differences are not substantial. This is in discord with insider-outsider theory suggesting that apparently high inter-industry wage differentials in Germany cannot be adequately explained by insider power story.

5 Summary and conclusion

The marked differences between the German and the U.S. labor market performance in the last two decades or so require an explanation. The Insider-Outsider theory is a candidate to

interpret the very specific dynamic pattern of German unemployment – showing high persistence or hysteresis. In a recent contribution St. Paul (2004) has argued that inter-industry wage differentials should be interpreted as rents. He suggests two alternative indicators to measure the size of rents in an economy. In his view rents are closely related to insider power. In the present paper we investigate the trends in inter-industry wage differentials in Germany and the U.S. using the measures proposed by St. Paul which are based on an earnings function approach. Adherents of the Insider-Outsider explanation of the unfavourable German labor market performance, would expect to find higher rents in Germany compared to the U.S. Corroborating the results of St. Paul, the evidence in our paper in principle supports this view. Both rent indicators follow declining trends for the U.S., while being stable or even increasing for Germany. Further findings, however, cast serious doubts on the Insider-Outsider related interpretation of inter-industry wage differentials. In contrast to St. Paul's study we take into account the possibility of experience and skill-specific rents across industries. According to a statistical test, we reject the hypothesis that experience rating does not depend on the sector. In line with basic assertions of Insider-Outsider theory, we argue that high-experienced workers should have more insider power and, consequently, should be able to extract higher rents. The same applies to skilled compared to low-skilled workers. Our empirical results do not support this relationship. Although the Insider-Outsider story seems attractive to explain the different unemployment records of Germany and the U.S., we have to conclude that either the Insider-Outsider approach does not give a full picture of the formation of inter-industry wage differentials, or the suggested indicators for rents generated by insider power are inadequate. To clarify the issue, more research is needed in this area.

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Appendix 1

The EPI extract of the ORG sample used here attempts to compensate for several problems with the raw CPS data. First, the hourly wage concept in the CPS is somewhat inconsistent within each annual survey. Hourly wages for "hourly workers" (those paid by the hour or who report their earnings on an hourly basis) exclude overtime, tips, and commissions. Hourly wages for "non-hourly workers," however, are calculated as usual weekly earnings (a variable constructed by the BLS from more detailed responses) by usual weekly hours, and includes overtime, tips, and commissions. Within a given cross-section, therefore, the hourly earnings concept is not consistent across hourly and non-hourly workers. Procedures designed to correct for this discrepancy in hourly earnings (by attempting to add overtime, tips, and commissions to hourly workers reported hourly wages) typically produce disappointing results before 1994, when the CPS underwent substantial revisions. The use of the same, somewhat flawed procedure over time, however, should ensure consistency of the overall hourly earnings concept across different years of the CPS data.

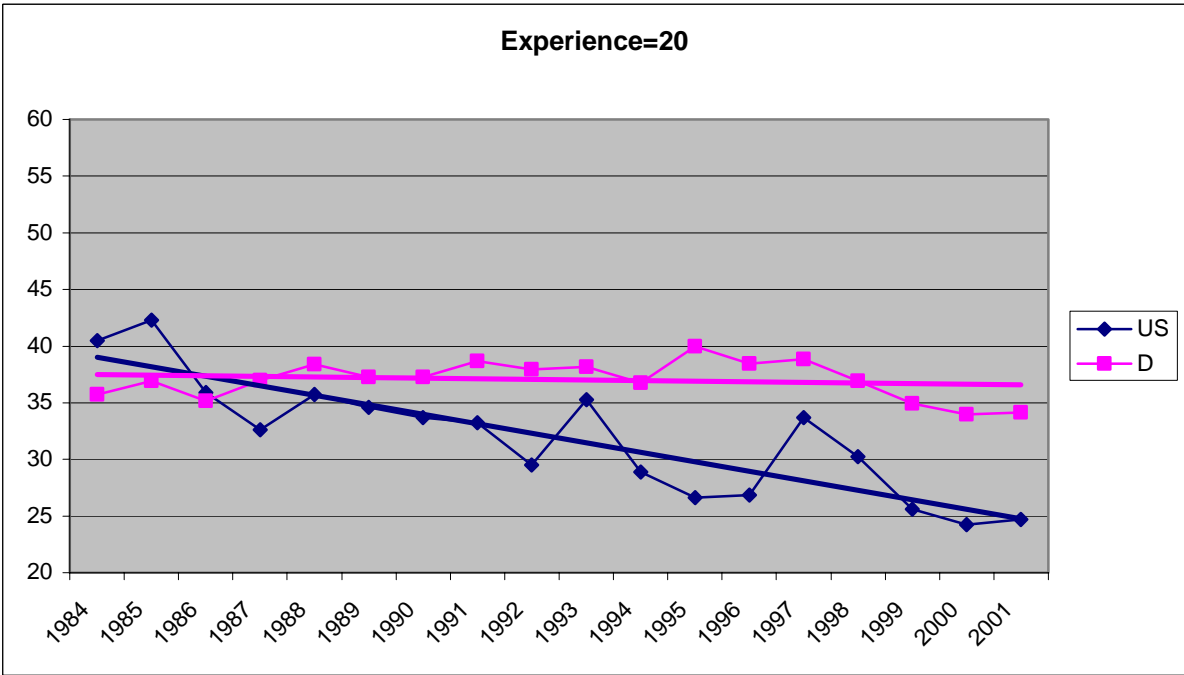
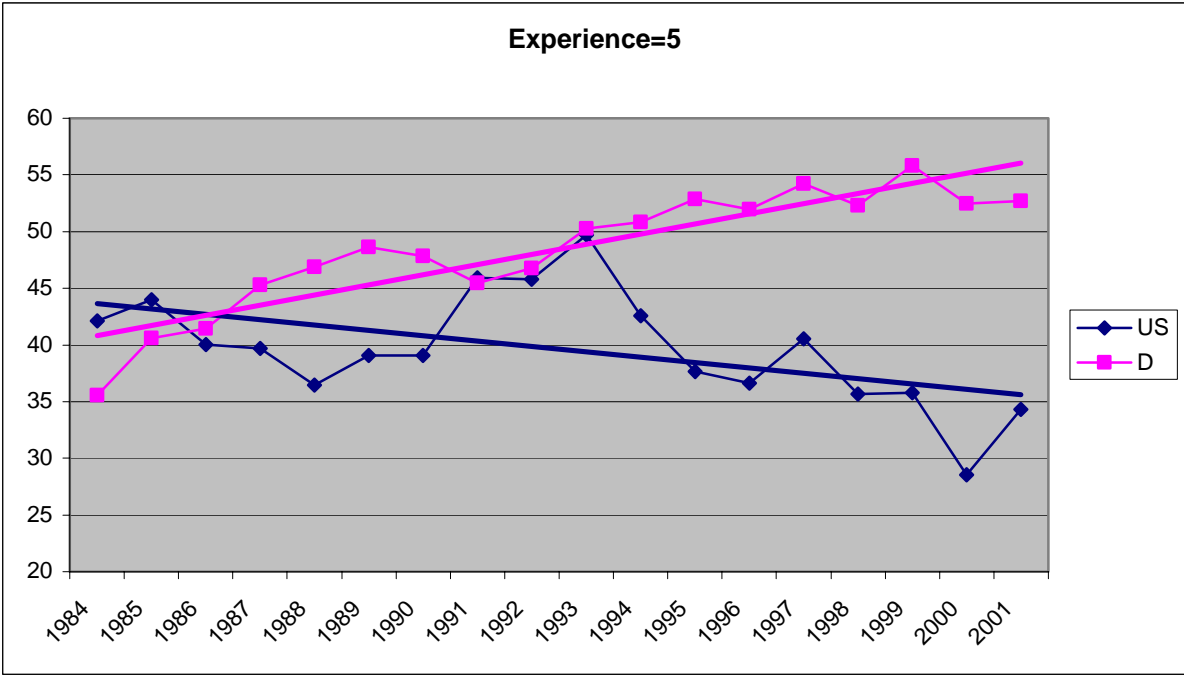
Appendix 2

The major problem we confronted at this stage was overlapping or mismatch of industries.

For example, in the US data “rubber and miscellaneous plastics products” go together in one group. In German data “rubber” is included in category “raw materials” (Grundstoff, Güterproduktion) whereas “plastics” belongs to “consumption goods” (Verbrauchsgütergewerbe).

In this paper we include “rubber and miscellaneous plastics products” into “consumption goods” based on consideration that plastics industry has a larger share in the economy than rubber. Some industries in “leather and leather products” category should be matched into “raw materials” and other into “consumption goods”. Same can be said about “paper and allied products” and “stone, clay, glass and concrete products”. Service industries were matched into three groups according to German classification: “business services” (Vorwiegend wirtschaftsbezogene Dienstleistungen), “household services” (Vorwiegend haushaltsbezogene Dienstleistungen), and “public services” (Gesellschaftsbezogene Dienstleistungen).¹⁴ The problematic industry in this case was „other professional services“ in the US data, as it was not clear whether they actually belong to business, household or public services.

¹⁴ Health services and sanitation go as a separate category.



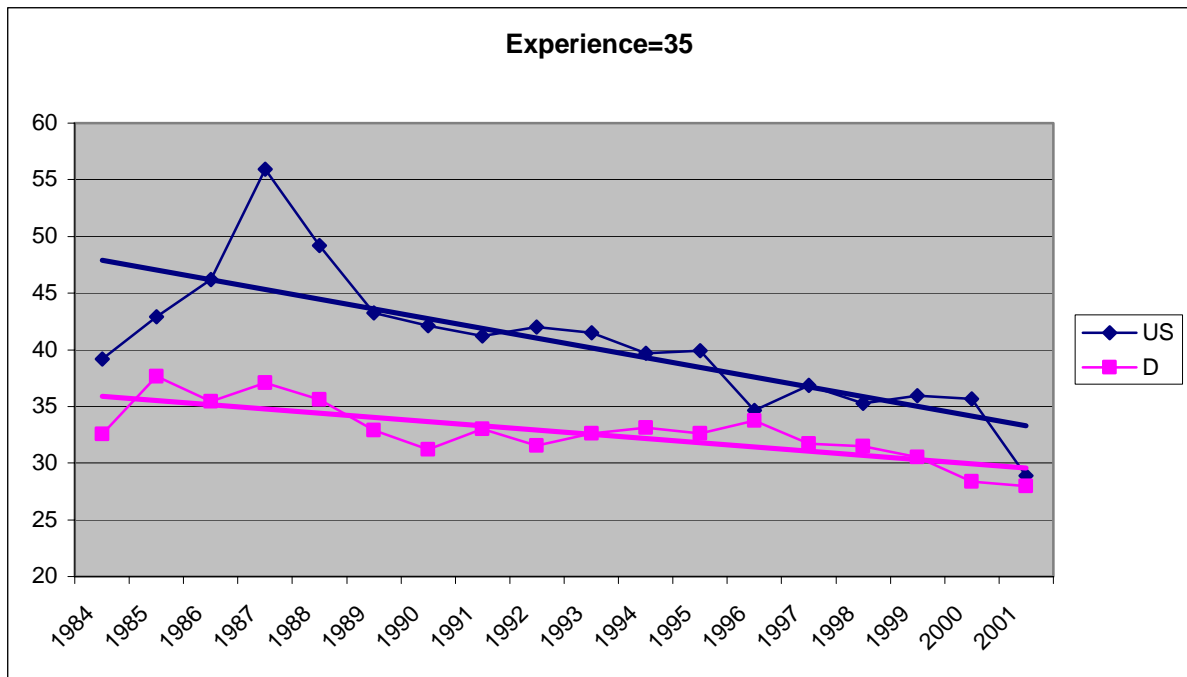
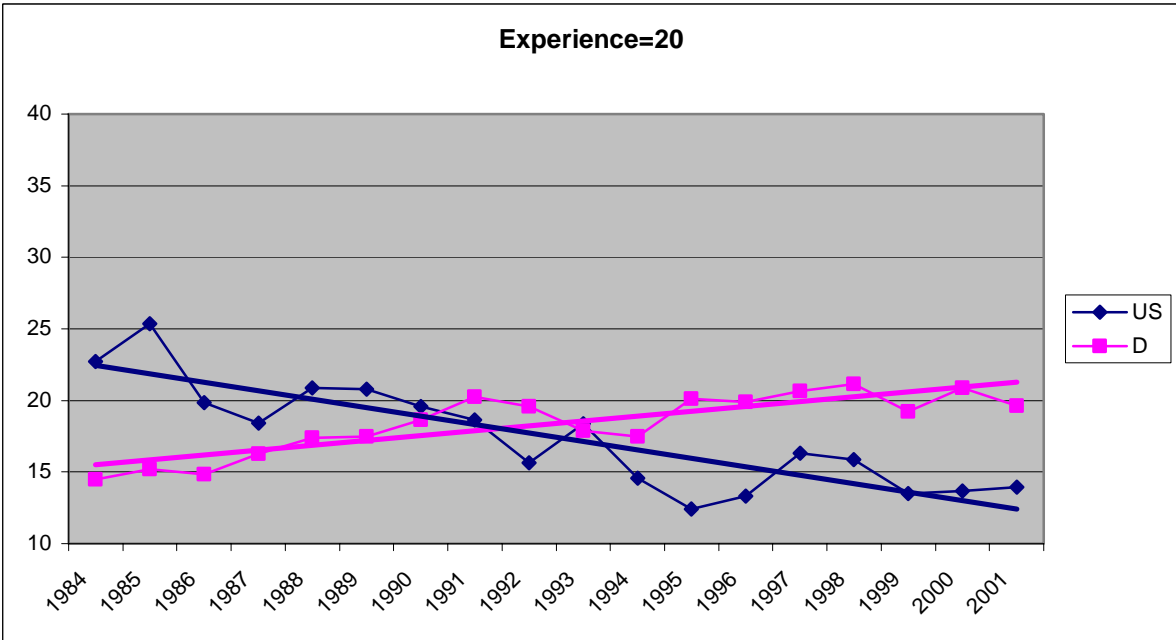
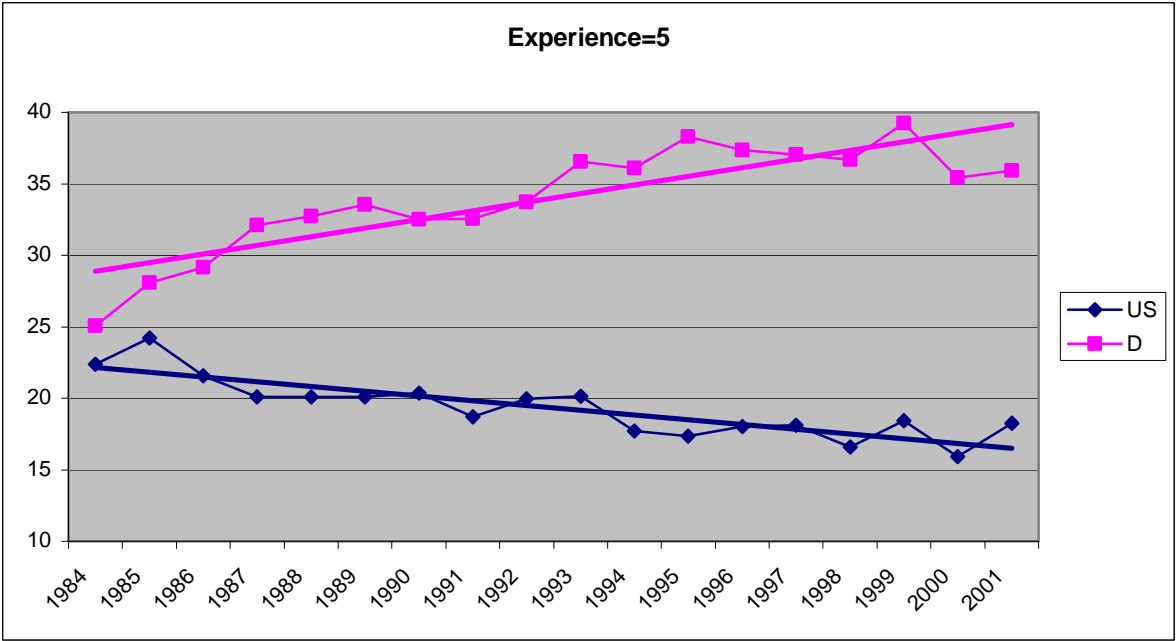


Figure 1: Spread between the highest and lowest industry earnings by experience (in % of lowest industry earning, skilled male full-time workers, 1984-2001)



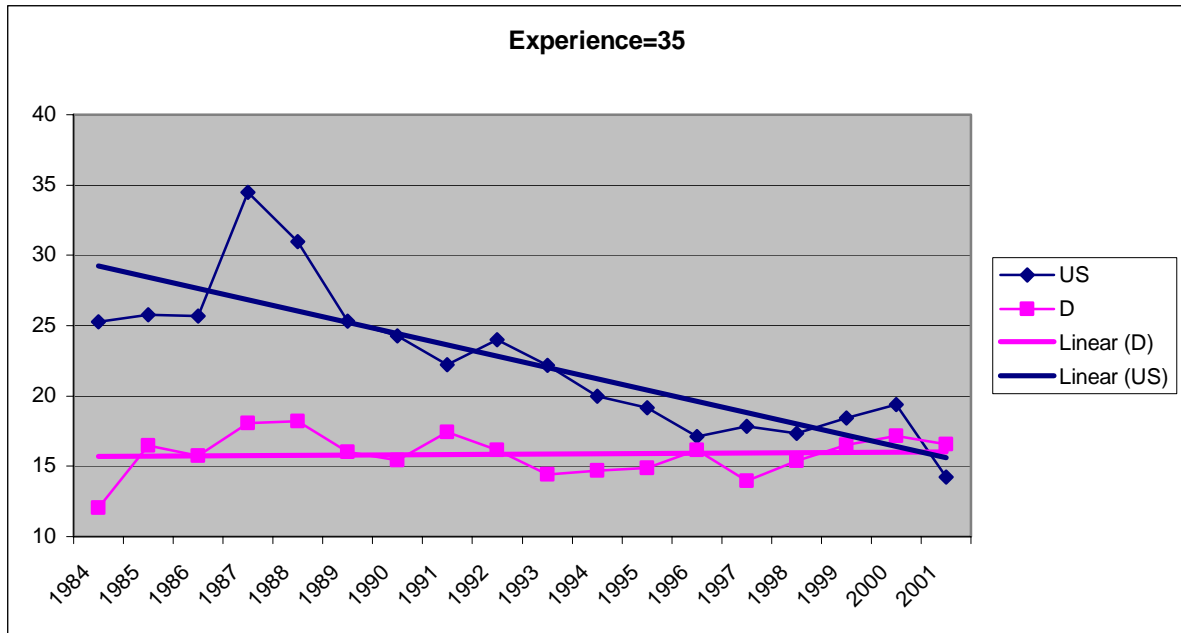


Figure 2: Weighted earnings differentials compared to lowest industry earnings by experience (in % skilled male full-time workers, 1984-2001)

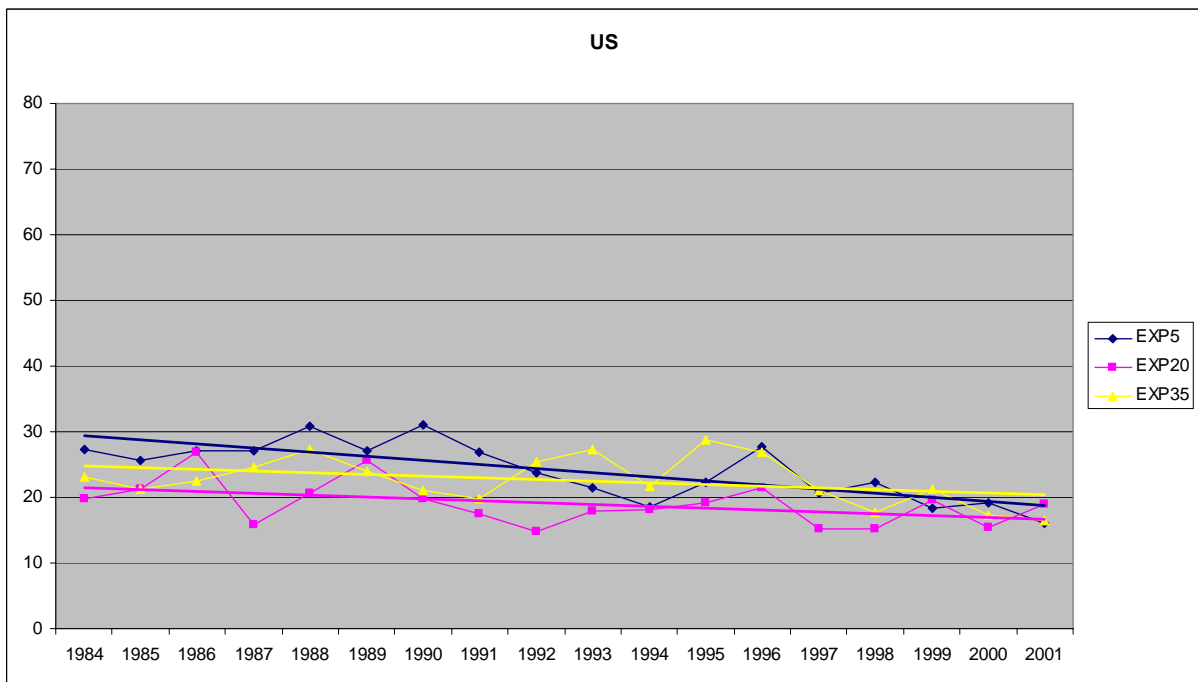
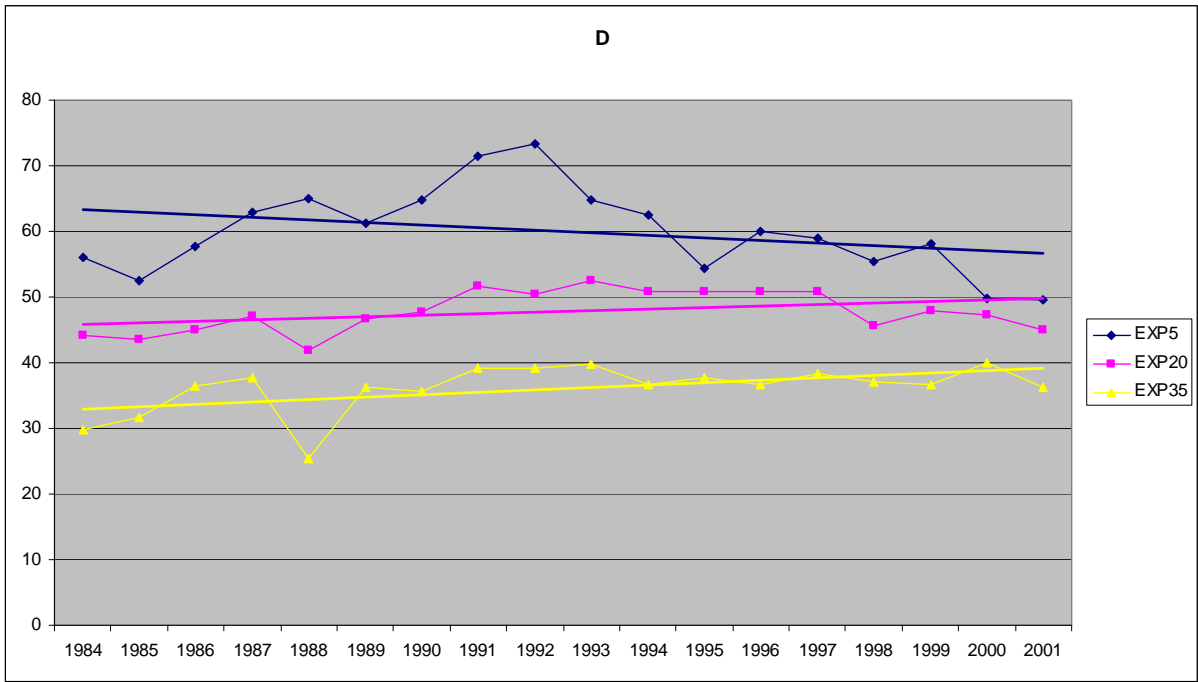


Figure 3: Weighted earnings differentials compared to lowest industry earnings by experience in Germany and the U.S. (in %, low-skilled male full-time workers, 1984-2001)

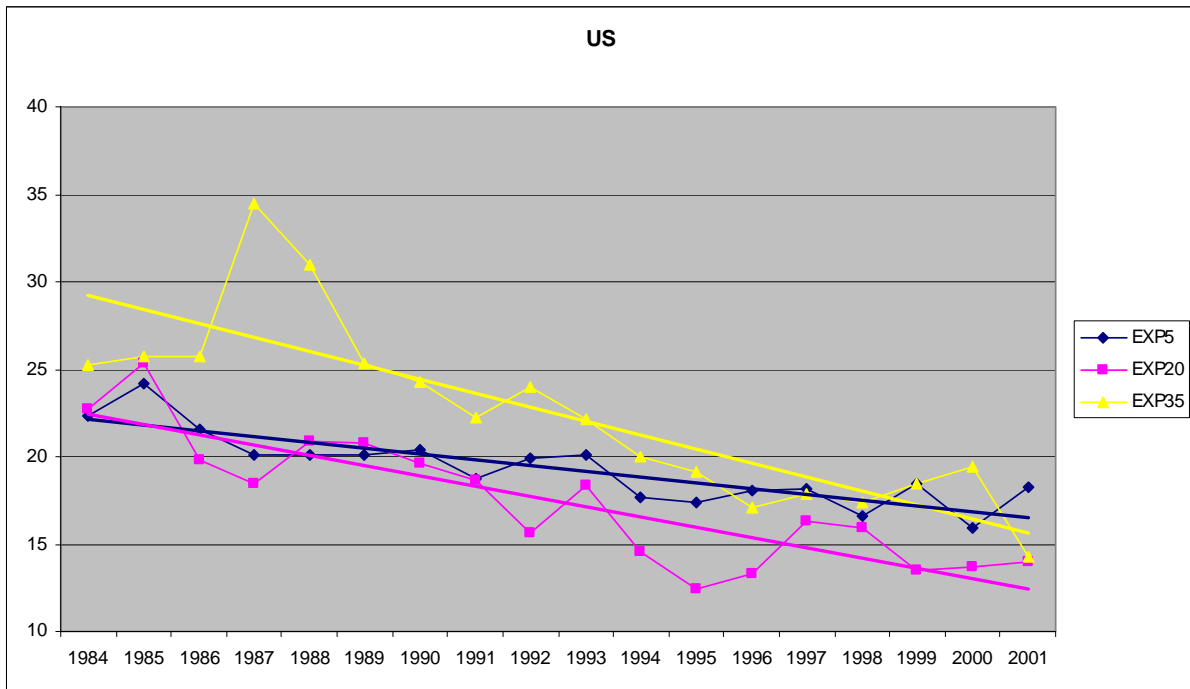
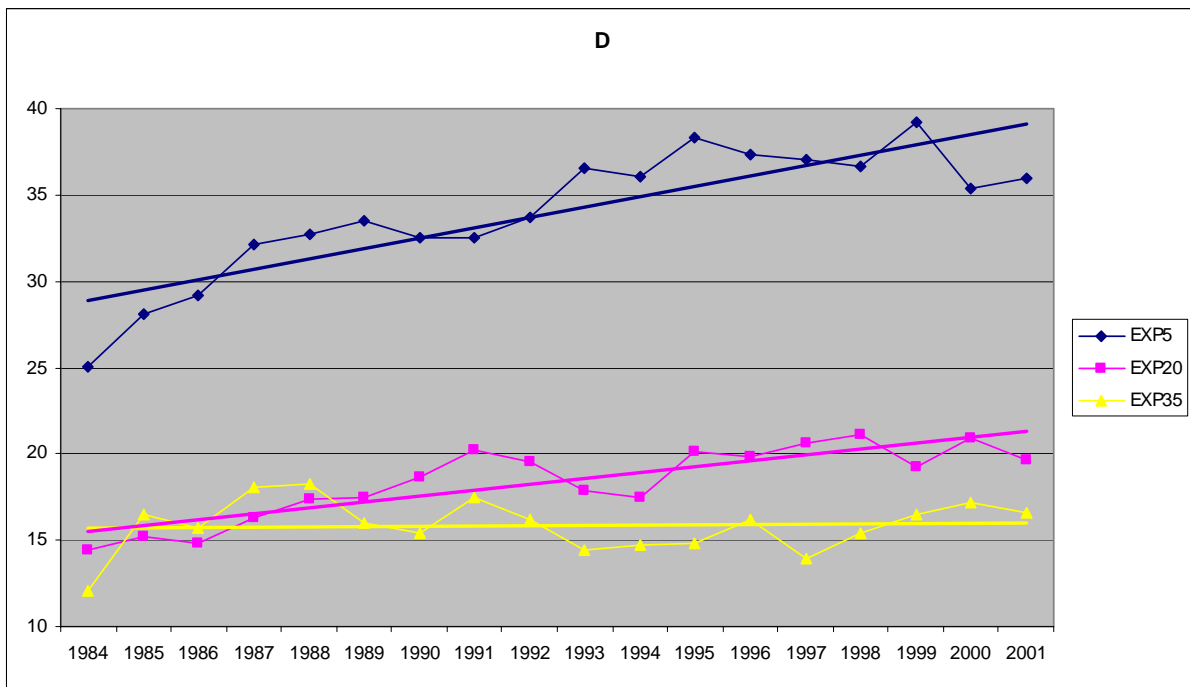


Figure 4: Weighted earnings differentials relative to lowest industry earnings by experience in Germany and the U.S. (in %, skilled male full-time workers, 1984-2001)