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The Case for a Symmetric Reaction Function of the European Central Bank

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Abstract

In a macro-economic framework where the European Central Bank targets individual country data, the nature of strategic interactions between fiscal authorities in the euro-zone can be described as a stag hunt game with (at least) two equilibria that can be pareto-ranked. In fact we show that, because of the indiscriminate nature of its monetary response, an ECB strategy of monetary retaliation to any individual country's over-expenditure affects all eleven countries to the same extent. This collective effect is similar to the teacher's old favorite "*all children stay behind in the class if one misbehaves*". This mechanism, we show, makes the game between fiscal authorities a multiple equilibria co-ordination game. We subsequently address the problem of equilibrium selection that is of particular importance to co-ordination games. Following Kandori et al. (1993), we apply Harsanyi and Selten's (1988) risk-dominance criterion to single out the conditions for fiscal restraint to emerge as *the* equilibrium selected by interacting actors. Our main conclusions are that the ECB can ensure convergence of fiscal authorities upon the pareto-optimal equilibrium (that is, fiscal restraint) by adopting a reward-oriented, counter-cyclical strategy that compensates fiscal authorities at the output level both for giving up fiscal discretion and for incurring the risk of being hit by a monetary tightening in response to developments elsewhere in the euro-economy. This means that interest rates' movements should smoothen economic fluctuations in order to give economic actors sufficient incentives to maintain restraint.

Zusammenfassung

In einem makroökonomischen Kontext, in dem die Europäische Zentralbank die wirtschaftlichen Daten einzelner Länder anvisiert, können die strategischen Interaktionen zwischen den Finanzbehörden der Euro-Zone als ein "stag hunt"- Spiel mit (mindestens) zwei pareto-Equilibrien beschrieben werden. Wir zeigen daß, aufgrund der ungezielten Art der monetären Reaktion, eine EZB-Strategie der monetären Vergeltung für zu hohe Ausgaben eines einzelnen Landes alle elf Länder gleichermaßen betrifft. Dieser Kollektiveffekt erinnert an die alte Lehrermethode: "Alle Kinder müssen nachsitzen, wenn eins aus der Reihe tanzt." Dieser Mechanismus macht das Spiel zwischen den Finanzbehörden zu einem Koordinationsspiel mit mehreren Equilibrien. Anschließend befassen wir uns mit dem in Koordinationsspielen besonders bedeutsamen Problem der Wahl zwischen Equilibrien. In Anlehnung an Kandori et al. (1993) wenden wir Harsanyi und Selten's (1988) Risikodominanzkriterium an, um die Bedingungen herauszufiltern, unter denen fiskale Zurückhaltung *das* Equilibrium bildet, das von den beteiligten Akteuren gewählt wird. Unsere wesentlichen Schlußfolgerungen sind, daß die EZB eine Konvergenz der Finanzbehörden auf das pareto-optimale Equilibrium (d.h. fiskale Zurückhaltung) sicherstellen kann, indem sie eine auf Belohnung ausgerichte,

antizyklische Strategie verfolgt, bei der die Finanzbehörden auf der Output-Ebene entschädigt werden -sowohl für die Abgabe fiskaler Entscheidungsfreiheit als auch für das Risiko, einer monetären Kontraktion ausgesetzt zu werden, die auf Entwicklungen anderswo in der Euro-Wirtschaft abzielt. Das bedeutet, daß Zinsentwicklungen wirtschaftliche Fluktuationen ausgleichen sollten, um den relevanten Akteuren ausreichende Anreize für fiskale Zurückhaltung zu bieten.

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1. Introduction

It is generally assumed that the ECB will target some Euro-wide aggregates to determine its monetary policy. If indeed focused on euro-wide targets, the ECB's interactions with fiscal authorities and wage bargainers in the euro-zone resembles a prisoner's dilemma. EMU observers have therefore assumed that the ECB would more or less emulate the Bundesbank's role at the European level. Given the multiplicity of sovereign fiscal decision-making authorities and the uncoordinated nature of wage bargaining at the European level, no restraint/monetary punishment establishes itself as the only equilibrium in this representation of the euro-zone's macro-economic game. The Stability Pact - imposing binding fiscal targets - is generally advanced then as the solution to avoid being trapped in a bad equilibrium of tight monetary policies and fiscal over-expenditure.

If, however, the ECB changes its strategy from targeting euro-wide aggregates to individual country data, the nature of the strategic interactions between fiscal authorities in the euro-zone can be shown to change into a stag hunt game with (at least) two equilibria that can be pareto-ranked. In fact, because of the indiscriminate nature of its monetary response, an ECB strategy of monetary retaliation to any individual country's misbehaviour (i.e. deviation from fiscal restraint targets) affects all eleven countries to the same extent. This collective effect is similar to the teacher's old favorite[1] "*all children stay behind in the class if one misbehaves*". This mechanism, we argue, makes the game between fiscal authorities a multiple equilibria co-ordination game[2] (as in table 1 below).

		Gov. B	
		Fiscal restraint	*Fiscal pressure*
Gov. A	*Fiscal restraint*	*$V(r_0)$* ↑	← *$V(r_0,r_1), V(r_1)$* ↓
	Fiscal pressure	*$V(r_1), V(r_0,r_1)$* →	*$V(r_1)$*

(table 1)

[1]. We thank David Soskice for suggesting this very appropriate expression.

[2] We focus in this paper on how the interactions between FAs are moderated by the ECB. However, a similar argument applies to interactions among wage bargainers in the euro-zone and to interactions between wage bargainers and fiscal authorities. They will all want to coordinate if the ECB targets individual deviations because of the indiscriminate nature of monetary retaliation.

$V(..)$ being the fiscal authorities' loss functions and $r_0 < r_1$ the interest rates levels corresponding respectively to restrained and unrestrained fiscal strategies. Convergence upon both equilibrium solutions is possible, governments' overarching priority being to act in accordance with the other governments. They may choose the pareto-dominated equilibrium strategy not because of individual interests (as in the prisoners' dilemma) but because of strategic uncertainty – they simply are not sure what the other governments will do and some risk is therefore associated with selecting the pareto-dominant equilibrium.[3] We claim that, in the above framework, the ECB plays a crucial role by fixing the interest rate spread in such a way as to help fiscal authorities choose among equilibrium solutions.

In the following sections we will show first why the above co-ordination problem arises in interactions between fiscal authorities at the European level; we will subsequently underline the main problems that this co-ordination dilemma generates for the ECB, and propose possible solutions. We will address the problem of equilibrium selection that is of particular importance to co-ordination games but has received relatively little emphasis in game theory literature (Weber 1998). Following Kandori et al. (1993), we apply the Harsanyi and Selten (1988) risk-dominance criterion to single out the conditions for fiscal restraint to emerge as *the* equilibrium selected by interacting actors. We will show that in order to implement fiscal restraint in the proposed set-up of macro-economic interactions, requirements for the ECB reaction function ought to be radically different from the ones that are generally delivered in prisoners' dilemma analyses.

2. Fiscal authorities' preferences and ECB reaction function

To define fiscal authorities' loss function we take as our starting point a simple Keynesian framework, where the fiscal authorities are interested in using fiscal expenditure to minimise output deviation from its "equilibrium" level, in the presence of negative (symmetric) shocks[4]. In doing so they also take into consideration the importance of budget restraint - that is, they also attach some negative value to having fiscal expenditure different from the target level which can comfortably be thought of as zero.

[3] Strategic uncertainty arises even in situations where objectives, feasible strategies, and institutions are completely specified and common knowledge (Van Huyck, Battalio, and Beil, 1990)

[4] At this stage, we have chosen to keep the model as simple as possible to present the main ideas and arguments. In particular, we will only focus on symmetric shocks (leaving the asymmetric shocks case for future research) and abstract from the role of cross-country spillovers whose explicit consideration, although crucial in some contexts, is not necessary to our main purpose.

Let Y be output, g fiscal expenditure and R the real interest rate. Call the equilibrium levels of output and the interest rate $Y^\wedge$ and $R^\wedge$. The relationship among these variables is given by:

$$y = Y - Y^\wedge = g - R - s + R^\wedge, \qquad \Rightarrow \qquad y = g - r - s,$$

where $s > 0$ is a shock term, $g \gtrless 0$ is the deviation from the target for fiscal expenditure and $r \gtrless 0$ is the deviation from target of the real interest rate. Hence, we can define fiscal restraint as a situation where $g = 0$.
Given the above definitions, the loss function for the FA can be written as[5]:

$$V = y^2 + a\, g^2, \text{ with } a>0.$$

The FA optimisation problem consists in choosing g to minimise the above loss function:

$$\min_{g} V = y^2 + a\, g^2. \qquad (1)$$

Results from minimisation should then be compared to the alternative case where fiscal restraint is implemented, that is g is simply set equal to zero.

Once the game is set up along the above lines, the crucial step is to define the CB reaction function with respect to the fiscal authorities. We can approximate the CB reaction function in the following way[6]:

$$\text{if } \forall g = 0 \text{ then } r = r_0, \qquad (2)$$
$$r = r_1 > \max(r_0\,,\, 0) \text{ otherwise.}$$

This means that the CB fixes two different interest rate levels: r_1 is the difference between the maximum interest rate and the target level (and therefore generally greater than zero), while r_0 may be fixed either higher or lower than zero depending on circumstances. Restrictions on r_0 will actually come out as a result of the equilibrium selection mechanism (see section 4 and 5). The maximum rate r_1 is chosen if one country deviates from its target value of g, which also means that the minimum interest rate is implemented only if *all countries stick to fiscal restraint, no one excepted*.

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[5] This loss function has also been used by Bessone Basto (s.d.).

[6] For simplicity, we will assume in what follows that the countries playing the game we analyze are large enough, so that a deviation by these countries is sufficient to trigger the reaction of the ECB.

In this framework, the CB acts as an external actor (with respect to the game among fiscal authorities) that automatically sets the interest rate at the level required by the outcome of the interactions among FAs. This role is crucial, since it allows the CB to fix the interest rate spread in such a way as to force fiscal actors to implement different equilibrium solutions. The next step then is to determine which conditions must be met by the interest rate spread in order for fiscal/wage restraint to emerge as an equilibrium and subsequently be selected by interacting actors.

3. The co-ordination game among fiscal authorities

A FA faces the following choice. If all FA accept fiscal restraint, then $g = 0$ and r is set at its low level (r_0), leading to the following ex-post value of the loss function: $V_0 = V(g=0 \text{ and } r=r_0) = (s + r_0)^2$. The corresponding output value is $y_0 = -(s + r_0)$. Alternatively, a FA may not accept fiscal restraint, and choose g by minimising the loss function above (V). As a consequence, the interest rate is set at its high level (r_1). Recalling the optimisation problem in (1), the optimal choice is given by:

$$dV/dg = g\,(1+a) - r_1 - s = 0 \qquad (3)$$

which implies that fiscal expenditure is given by $g_1 = 1/(1+a)\ (r_1 + s)$ and the corresponding output value is $y_1 = -a/(1+a)\ (s + r_1)$.

The FA that moves away from fiscal restraint obtains:

$$V_1 = a/(1+a)\ (r_1 + s)^2 \qquad (4)$$

while the loss of the restrained FA facing the above deviatory FA is:

$$V\hat{} = V(g=0 \text{ and } r=r_1) = (s + r_1)^2. \qquad (5)$$

It is straightforward to check that $V\hat{} > V_1$. Hence, the game among FA can be written in the following way:

		B	
		Restraint	No restraint
A	Restraint	V_0 ↔	$V^\wedge, V_1$
		↕	↓
	No restraint	$V_1, V^\wedge$ →	V_1

(table 2)

In order for fiscal restraint to be an equilibrium solution in the above game the following condition should be met: $V_1 \geq V_0$. If this is the case, then the game has two different equilibrium solutions, namely V_1 *and* V_0: if either one of the two countries is deviating, then both are better off deviating, while if the two pursue fiscal restraint they both benefit from it.

Since both V_1 as well as V_0 values depend on interest rates levels, the CB has a crucial role to play in establishing the conditions for the above inequality to hold. In particular, it is clear that if $r_1 = r_0$ then $V_1 < V_0$ and fiscal restraint is not an equilibrium strategy.

We study the required behaviour of the CB in section 4 below. However it should be stressed that, once the above condition is satisfied, it just ensures that restraint is one equilibrium solution in the game but by no means that it will be ultimately selected by FA. The issue of equilibrium selection is particularly important in co-ordination games and we will treat this problem in section 5.

4. Is restraint one equilibrium solution? Two possible scenarios

We consider now how the CB can ensure that fiscal restraint is indeed an equilibrium solution for the above FA game. To do this we compare the ex-post loss function values V_1 and V_0, and make sure that the following condition is met:

$$(r_0 + s)^2 < (r_1 + s)^2\, a/(a+1) \qquad (6)$$

which basically means ensuring: $(y_0)^2 < (y_1)^2\,(a+1)/a$. Hence, fiscal restraint is an equilibrium solution in the FA game if the magnitude of output deviation associated with fiscal restraint is lower than the one associated with the alternative unrestrained (optimal) fiscal choice. This implies considering different economic scenarios concerning the value of output under respectively an unrestrained and a restrained

fiscal strategy. Recalling that we previously assumed $r_1 \geq \max(0, r_0)$, the following cases should be analysed [7]:

	$y_1 \geq 0$ $s \leq -r_1$	$y_1 \leq 0$ $s \geq -r_1$
$y_0 \geq 0$, $s \leq -r_0$	~~case 1~~	case 2
$y_0 \leq 0$, $s \geq -r_0$	~~case 4~~	case 3

(table 3)

This leaves us with two alternative scenarios, namely case 2 and 3. In case 3, the CB is unable and/or unwilling to entirely compensate the adverse shock term, thus the minimum interest rate value is such that $s > - r_0$ (and clearly $s > - r_1$) and the economy is in a recessionary scenario (both $y_0 \leq 0$ and $y_1 \leq 0$). In the alternative case 2 scenario, recovery is possible (that is, $y_0 \geq 0$ *vs.* $y_1 \leq 0$) because the minimum interest rate value is such that [8]: $- r_0 > s > - r_1$.

Let us analyse what the CB should do in each of the two scenarios above, in order to make sure that fiscal restraint is indeed an equilibrium in the co-ordination game.

■ CASE 3 (recession vs. recession $\Leftrightarrow$ r_0 *and* $r_1 > -s$)

One can easily show that, for $V_1 \geq V_0$ to hold, the following condition for interest rate spread must be met[9]:

$$(-s <)\ r_0 < A\ r_1 - s/(1+a) = r\hat{},\ \text{ with: } r\hat{} \gtrless 0 \ \Leftrightarrow\ r_1 \gtrless s/a.$$

This means in particular that the minimum interest rate value must be set by the CB according to the following rule: $r_0 < r\hat{} \gtrless 0.$

■ CASE 2 (recovery vs. recession $\Leftrightarrow - r_0 > s > - r_1$)

For $V_1 \geq V_0$ to hold in this case, the condition for interest rate spread should be:

$$(-s >)\ r_0 > - A\ r_1 - (A+1)\ s,$$

---

[7] Note that case 4 must be excluded because of the assumption that r_1 is at least as large as r_0, and case 1 because of the assumption that $r_1 > 0$.

[8] Notice that for case 2 to be possible the minimum interest rate ought to be negative (that is below target).

[9] We define $A = a/(1+a)$.

which basically fixes the lower boundary for the (negative) minimum interest rate value necessary for the CB to foster economic recovery without neglecting restraining incentives.

The main conclusions that can be drawn from the above analysis are that, in the presence of adverse shocks to the economy, the CB should fix the minimum interest rate level in response to the strength of the shock term. In fact, in order for fiscal restraint to be one equilibrium solution in the game among FA, *the CB should fix the interest rate so as to (at least partially) offset output deviation (from the equilibrium value) in order to compensate fiscal authorities for giving up their fiscal discretion*. If this is not the case, the co-ordination game set-up disappears and the unique solution left is the unrestrained equilibrium. In particular, in a recessionary scenario (case 3) where interest rate movement does not fully compensate adverse shocks, the minimum interest rate should be fixed close/below target value. Moreover, in a recovery scenario (case 2) where interest rate movements fully compensate adverse shocks, the minimum interest rate should be negative but not too low. However, results derived in this section are only preliminary since they must be checked in the light of the equilibrium selection analysis that follows.

5. Is restraint the selected equilibrium solution? The need for a symmetric ECB reaction function

In the co-ordination game context that we have being discussing so far, two different Nash equilibria coexist. We need to find a mechanism that determines which of the equilibria the actors ultimately converge upon. Kandori et al. (1993) show that the selected equilibrium in a co-ordination game is generally the risk-dominant equilibrium (Harsanyi and Selten, 1988). The criterion of risk-dominance allows actors to minimise the possible risk associated with their equilibrium strategy, that is the uncertainty concerning other actors' behaviour (in our case, the possible outcome loss coming from indiscriminatory CB retaliation in reaction to the other FA unrestrained fiscal behaviour).

For the co-ordination games modelled above, the criterion of risk dominance indicates that for the pareto-dominant equilibrium V_0 to be selected, the following should hold:

$$V_0 - V_1 < V_1 - V\text{^} \qquad (7)$$

We conclude that holding $V_0 < V_1$ (as we have done so far) is not in itself sufficient for the fiscal restraint equilibrium to be chosen. This result comes from the CB behaving according to what we described in the introduction as the old teacher's

favourite "*all children stay behind in the class if one misbehaves*". In fact, if the outcome loss from behaving correctly when the others do not (namely, $-V_1$) is too high, then the selected equilibrium according to the risk-dominance criterion will be the pareto-dominated one (namely, V_1) meaning that actors will converge upon the unrestrained fiscal solution.

Substituting for the loss function values in our model we can rewrite the condition (7) in the following form:

$$(r_0 + s)^2 < (r_1 + s)^2 (a-1)/(a+1), \quad (8)$$

which is clearly more restrictive than condition (6) above. Inequality (8) only makes sense if $a > 1$. Let us assume that this is the case [10].

Solving the above inequality with respect to the economic scenarios of recession and recovery, we find that the conditions for the interest rate spread are as follows:

- CASE 3 (recession vs. recession $\Leftrightarrow r_0 \text{ and } r_1 > -s$)

For the risk-dominance condition to hold, the interest rate spread should be fixed according to the following [11]:

$$(-s <)\ r_0 < A'\ r_1 - 2s/(1+a) = r^*,$$
$$\text{with: } r^* \gtrless 0 \ \Leftrightarrow\ r_1 \gtrless 2s/(a-1),$$

which is similar, but much stricter than the condition derived in the previous section. Again, the minimum interest rate value should be set by the CB according to the following rule: $r_0 < r^* \gtrless 0.$

- CASE 2 (recovery vs. recession $\Leftrightarrow -r_0 > s > -r_1$)

For the risk-dominance condition to hold in this case, the condition for interest rate spread should be:

$$(-s >)\ r_0 > -A'\ r_1 - (A'+1)\ s,$$

[10] This means that a strong commitment by fiscal authorities to fiscal restraint is necessary (though not sufficient) for restraint to be the (possible) selected equilibrium outcome of the co-ordination game.

[11] We define $A' = (a-1)/(1+a)$.

which fixes a lower boundary for the (negative) minimum interest rate value necessary for the CB to secure economic recovery together with restraining incentives.

Hence, the analysis of equilibrium selection reinforces the results previously derived for the existence of a fiscal restraint equilibrium. In fact, fulfilment of the risk-dominance criterion for the fiscal restraint equilibrium requires that *the CB fixes interest rate so as to compensate fiscal authorities both for giving up fiscal discretion and for incurring the risk of being "left behind in class if one other misbehaves".* In order to do that, CB intervention to offset output deviation should be stronger than required in the previous section. This means that in the recessionary scenario (case 3) the minimum interest rate should be fixed according to $r_0 < r^* < r^\wedge$; and that in the recovery scenario (case 2) the minimum interest rate should be negative but not too low.

Hence, we can conclude that: first that interest rates should be lowered in case of negative shocks in order to make co-ordination on fiscal restraint ultimately possible; and second, that the ECB should indeed adopt a pro-active, symmetric reaction function similar to the one employed by the Federal Reserve [12]. Hence, to reap the benefits from co-ordination between fiscal authorities on restraint, we conclude that the ECB should not limit itself to a reactive punishment. Suitable rewards should accompany it and may indeed ensure that Europe's macro-economic game to converge on the fiscal restraint, low interest rates equilibrium.

6. Conclusions

Our analysis shows that, for the fiscal restraint equilibrium to be the selected equilibrium outcome in the co-ordination game between fiscal authorities, institutional preconditions (such as agreement upon target values and/or strong commitment to restraint) are necessary but by far not sufficient.

As we have shown, the ECB can ensure convergence of fiscal authorities upon the pareto-optimal equilibrium (that is, fiscal restraint) by adopting a reward-oriented, counter-cyclical strategy that compensates fiscal authorities, at the output level, both for giving up fiscal discretion and for incurring the risk of being *"left behind in class if one other misbehaves"*. This means that interest rates' movements should smoothen economic fluctuations in order to give economic actors sufficient incentives to maintain restraint.

[12] Hence, our analysis supports the views recently expressed by a.o. Allsopp and Vines 1998, and Soskice 1999.

In that sense, the very rationale for subscribing to the Stability Pact is undermined when the ECB is not willing – because of its focus on an inflation *increase* - , or not able – because of developments elsewhere in the economy, notably the wage bargaining system -, to pick up the signal of restraint and respond with looser monetary policies.

By proposing an alternative strategy for the ECB monetary rules (targeting individual country behaviour rather than euro-wide aggregates) our analysis has shown that a *self*-enforcing equilibrium of fiscal restraint in the euro-zone exists. If suitably rewarded, that is to say, with the ECB adopting a transparent, symmetric reaction function, fiscal authorities will indeed adopt fiscal restraint in their own interest.

References

Allsopp, Christopher, and David Vines, “The Assessment: Macroeconomic Policy after EMU”, *Oxford Review of Economic Policy* 14:3, Autumn 1998, 1-23.

Bessone Basto, Rita “Coordination of Monetary and Fiscal Policies in a Monetary Union”, M.Phil Thesis in Economics, Christ Church, Oxford, s.d.

Buti, Marco, Daniele Franco, and Hedwig Ongena, “Fiscal Discipline and Flexibility in EMU: the Implementation of the Stability and Growth Pact”, *Oxford Review of Economic Policy* 14:3, Autumn 1998, 81-97.

Dornbusch, Rudi, Carlo Faveri, and Francesco Giavazzi, “Immediate Challenges for the ECB. Issues in Formulating a Single Monetary Policy”, *Economic Policy*, April 1998, 15-64.

Eichengreen, Barry, and Charles Wyplosz, “Stability Pact. More than a Minor Nuisance?”, *Economic Policy*, April 1998, 65-113.

Hall, Peter, “Central Bank Independence and Coordinated Wage Bargaining: Their Interaction in Germany and Europe”, *German Politics and Society* 31, Spring 1994, 1-23.

Hall, Peter, and Robert Franzese Jr., “Mixed Signals: Central Bank Independence, Coordinated Wage Bargaining, and the European Monetary Union”, *International Organization* 52:3, Summer 1998, 505-535.

Harsanyi, J.C. and R. Selten, “A General Theory of Equilibrium in Games”, Cambridge: MIT Press, 1988.

Iversen, Torben, “Wage Bargaining, Central Bank Independence, and the Real Effects of Money”, *International Organization* 52:3, Summer 1998, 469-504.

Kandori, Michihiro, George Mailath, and Rafael Rob, “Learning, Mutation, and Long Run Equilibria”, *Econometrica* 61:1, January 1993, 29-56.

Soskice, David, “The Future Political Economy of EMU. Re-thinking the Effects of Monetary Integration on Europe”, WZB-Discussion Paper FS I 99-302, 1999 [a shorter version of this article appeared in German in the 1997 Yearbook of the Friedrich Ebert Stiftung]

Soskice, David, and Torben Iversen, “Multiple Wage-Bargaining Systems in the Single Currency Area”, *Oxford Review of Economic Policy* 14:3, Autumn 1998, pp 110-124

Van Huyck, John, Raymond Battalio, and Richard Beil, “Tacit Coordination Games, Strategic Uncertainty, and Coordination Failure”, *American Economic Review* 80:1, March 1990, 234-248.

Roberto Weber, "Coordination Problems in Growing Firms: Insights from Experiments", mimeo, California Institute of Technology, 1998.

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European Academy of the Urban Environment
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1995, Södertäje, PM Bäckström Förlag, 53 Seiten

Günther Schmid / Jacqueline O'Reilly /
Klaus Schömann (Eds.)
International Handbook of Labour Market Policy and Evaluation
1996, Cheltenham, UK, Edward Elgar, 954 Seiten

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The Dynamics of Labor Earnings over the Life Course. A Comparative and Longitudinal Analysis of Germany and Poland
1994, Max-Planck-Institut für Bildungsforschung: Studien und Berichte, Bd. 60, Berlin, edition sigma,190 Seiten

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1998, London/New York, Routledge, 214 Seiten

zukunft im zentrum, Service-Gesellschaft für Beschäftigungs- und Qualifizierungsberatung / Wissenschaftszentrum Berlin für Sozialforschung (Hrsg.)
Arbeitslandschaft Europa. Bericht zum Zweiten Europäischen Arbeitsmarktkongress
The European Labor Landscape. Report on the Second European Labor Market Congress
Berlin 1994
Vertrieb: zukunft im zentrum gGmbH, Rungestraße 19, D-10179 Berlin, Schutzgebühr: 20,-- DM, 328 Seiten

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