

SOME REMARKS ON THE EFFECTS OF ACTIVE LABOUR MARKET POLICIES IN POST-TRANSITION

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Abstract:

Social cohesion is the principal goal behind active labour market policies (ALMPs), including those financed at supra-national level, like the European Social Fund. In this paper we use NUTS4 level data on the local labour market dynamics in an attempt to verify direct and indirect effects of ALMPs. We use data for 2000-2007 for Poland, while this period comprised both stark increases and reductions in the unemployment rates. Over this time also the financing of ALMPs has been increased considerably, transforming both to higher intensity of ALMPs (wider coverage) and higher extensiveness of these activities (increase in per treatment cost). At the same time, these trends have transmitted into local context with highly heterogeneous composition of instruments used and actual coverage rates and costs. We implement seemingly unrelated regressions (SURE) approach to inquire the effects of ALMPs on inflows and outflows rates among Polish local labour markets.

Key words: unemployment dynamics, unemployment convergence, SURE, transition

JEL Codes: J64, E24, P21

1. Introduction

When evaluating the effectiveness of differentiated active labour market policies (ALMPs), one typically resorts to two approaches. Basing on individual data allows the estimation of the treatment effect for differentiated instruments, taking into account the developments in a control group. The literature in this field is vast, including, among others see: Sciulli (2005) as well as Destefanis and Fonseca (2007) for Italy, for the US or for Germany. This approach requires not only relatively detailed micro-level data, but also observing individuals after the completion of activation programmes, which most transition countries lack in general.

The latter approach focuses on regional data instead. The obvious shortcoming is that either quite strong assumptions need to be made concerning the distribution of unemployed among regions (essentially imposing homogeneity during the estimation procedures), or one needs relatively large datasets and considerable heterogeneity to sustain underpinnings for policy implications of the findings¹. On the other hand, an extensive theoretical framework for the effects of ALMPs on employment has been developed by Calmfors (1994), and recently in a stochastic framework by Lechner and Vazquez-Alvarez (2006)². As stated by Hagen (2003), raising the efficiency of matching process is usually regarded as the main aim of ALMPs, and can be reached by adjusting the human capital of job seekers to the requirements of the labour market and by increasing the search intensity (as well as search capacity) of (former) programmes participants. These aims are especially pronounced in transition countries with large structural mismatches.

In this paper we use NUTS4 level data on the local labour market dynamics in an attempt to verify direct and indirect effects of ALMPs. We use data for 2000-2007 for Poland, while this period comprised both stark increases and reductions in the unemployment rates. Over this time also the financing of ALMPs has been increased considerably, transforming both to higher intensity of ALMPs (wider coverage) and higher extensiveness of these activities (increase in per treatment cost). At the same time, these trends have transmitted into local context with highly heterogeneous composition of instruments used and actual coverage rates and costs.

¹ Furthermore, regional data rarely allow measuring the scale of some negative indirect effects like displacement, substitution or redistribution effects.

² See also Calmfors and Skedinger (1995) as well as Calmfors et al (2002), while the empirical applications were extensively evaluated by Petrongolo and Pissarides (2001).

Under the conditions of stark unemployment rate disparities – as is the case of Poland – convergence necessitates that higher unemployment rate regions need to be characterised by relatively higher ratio of outflow and inflow rates. The algorithm allocating ALMPs financing across regions favours more troubled local labour market, giving a premium to higher than average unemployment rate, number of unemployed and worse than average structure of unemployed (e.g. share of long-term unemployed). If the ALMPs were efficient, we should observe positive impact on outflow ratios, while for the convergence it would be necessary that inflow/outflow ratios improve in more deprived regions. We have therefore two empirical aims: (i) verify whether the unemployment dynamics in more troubled regions permit catching up and (ii) assess whether the ALMPs actually contribute to alleviating the local labour market difficulties. To this end, we implement seemingly unrelated regressions (SURE) approach to inquire the effects of ALMPs on inflows and outflows rates among Polish local labour markets and compare the outflow/inflow ratio with a benchmark constructed as a counterfactual in these regressions.

The paper is organised as follows. In the next section we briefly review the literature concerning ALMPs as well as transition. In section 3 the situation in Poland and data are presented, while Section 4 discusses the method and the results. In the concluding section we derive policy implications of the findings.

2. Literature review

Unemployment dynamics at local level has received a lot of attention from the academia. Buettner (2007) compares empirical evidence on regional labour market flexibility in Europe (but uses different aggregation levels for different countries, which makes the results weaker). Marelli (2004) as well as Huber (2007) provide an overview of similarities and differences across European Union regions. In particular, it seems that CEE countries exhibit higher regional wage flexibility, Buettner (2007). At the same time, despite phenomenal migrations emerging after 2004, labour mobility is still assessed to be low (Kaczmarczyk and Tyrowicz 2008), while Fihel (2004) demonstrates that effectively in the local scale unemployment is not significant as pushing factor³. In the case of CEECs, the role of transition processes may indeed still be significant, Svejnar (2002a), while growing average job tenure as well as average time spent in unemployment or inactivity, Svejnar (2002b) were characteristic.

On the other hand, transition commenced in Poland in 1989, while after a decade another wave of massive unemployment sprung. While it is possible that some enterprises might have avoided the pains of restructuring in the early 1990s and were inevitably following these steps in the second part of this decade, typical market economy processes were already at play. These were indicated by educational boom (Poland has second highest tertiary education enrolment rates, after South Korea) as well as vanishing premium to being employed in a private sector, as argued by Saczuk and Tyrowicz (2009).

The effects of ALMPs in a transition context have been analysed already in mid 1990s, albeit with scarce data: including Boeri (1994), Lehman (1995), Burda (1996), Góra, Lehmann, Socha, and Sztanderska (1996), Kwiatkowski and Tokarski (1997) and Puhani (1999) as well as summary by Dar and Tzannatos (1999) as well as Martin (2000) and Martin and Grubb (2001)⁴. Typically, unlike micro-level studies, the findings were rather discouraging in terms of value for money or sometimes even lack of visible ALMPs effects. Frequent defence argument bases on the fact that some ALMPs effects take longer to appear or may not be discounted in the period of labour market contraction but will eventually boost employment with the change of business outlooks.

Vodopivec, Wörgötter and Raju (2003) review also the effects of the passive component of the labour market policies, finding some expected negative spillovers and interrelations between active and passive labour market policies. While a new wave of research sprung recently, incorporating Balkan and CIS countries with the availability of World Bank labour market surveys, the findings of

³ All these issues have been surveyed, among others, by Huber (2007)

⁴ The principal studies are reviewed in Munich, Svejnar and Terrel (2000)

the post-transition period are only slightly more discouraging, e.g. Vroman (2002), Godfray (2003), Betcherman, Olivas and Dar (2004), Hujer, Thomsen and Zeiss (2006), Fares and Tiongson (2007)⁵.

In the empirical literature of unemployment rate characteristics, one can find a number of differentiated approaches towards the unemployment rate dynamics and persistence as well as distribution, according to Decressin and Fatas (1995), Obstfeld and Peri (1998) or more recently, Armstrong and Taylor (2000). Perugini, Polinori and Signorelli (2005) use NUTS2 level data and inquire the regional differentiation of Poland and Italy. Marelli (2004) focuses on specialisation for NUTS2 EU regions with tripartite desegregation (industrial, agricultural and service sectors), but analyses predominantly income and economic convergence and not explicitly the underlying fundamentals⁶. In principle, however, convergence is necessitating relatively more favourable inflow/outflow ratios in relatively more troubled regions, which constitutes the main angle of this study. Theoretically, this approach builds on a model developed by Lechner and Vazquez-Alvarez (2005), which introduces exogenous – and potentially asymmetric – stochastic shock at the labour market into individual choices of effort and activity in the environment where skill improving costless training is available.

3. Data and the context of Poland

Transition from a centrally planned to a market economy typically involves massive layoffs and economic slowdown inhibiting vivid job creation, Grotkowska (2006). The situation in the early 1990s in Poland was no different, with unemployment rate increasing to the thresholds of above 10% in just two years and since then never fell below, Figure 1. There are some fundamental characteristics of the Polish labour market. Firstly, high unemployment is believed to have a structural character. Almost 70% of Polish unemployed have primary or vocational education only, frequently outdated professions or no longer applicable skills. Moreover, some surveys suggest that even roughly 50% of these individuals are reluctant to upgrade their qualifications, Tyrowicz (2006).

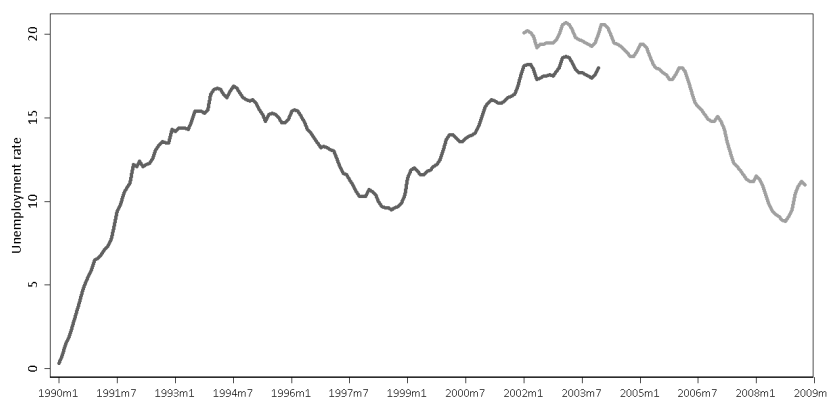


Figure 1. Unemployment rate evolution in Poland, 1990-2009⁷

Professional and geographic mobility is very low, while transitory migration of approximately 1 million Poles to Ireland, Sweden, Norway, Germany, UK and other EU countries concerns

⁵ In addition, subsequent to the Hartz reforms in Germany there has been many studies, also at regional level, exploring the effects of these policies, including among others Hujer, Caliendo and Thomsen (2004), Csillag, Schneider, Uhlendorff and Zhao (2006) and many others.

⁶ Overman and Puga (2002) perform conditional kernel density analyses of European unemployment rates taking into account the distributions of underlying fundamentals (eg. the skills, the regional specialisation as well as the growth rates of population and the labour force). Also KDE but in a different framework is applied by Tyrowicz and Wojcik (2007) for Poland and Tyrowicz and Wójcik (2009) for Czech Republic and Slovakia.

⁷ In 2003 new national census data were made available, which revealed lower size of population and labour force, thus leading to updating upwards the unemployment rates by roughly 3 percentage points. Unfortunately, these were recalculated backwards only for 2002-2003 at national level and 2003 at local level. For subsequent computations, we have filtered the post Jan2003 data to avoid difficulties in statistical interpretation of the findings. Moreover, most of the variables used in the study are referenced to the number of unemployed at a local labour market rather than the unemployment rate. Consequently, the potential contamination of the dataset seems to have limited impact on the quality of the findings.

predominantly those aged under 30 years old (80%) and with relatively high skills (17% with a university degree). Long term unemployment rate is the highest in EU (currently app. 10%, EU average falls short of 4%). Employment in agriculture still exceeds 17%, which is extremely high by European standards, while half of the registered unemployed live in the rural areas. In addition, forecasts concerning the agricultural sector at large suggest, that due to increasing productivity, hidden over-employment in this sector will soon transform to *de facto* unemployment and/or premature labour market exits. Thus, low skills, low mobility and excessive employment in the agriculture are the main structural traits of the labour market problems in Poland.

Finally, this is not high unemployment that creates the main labour market challenge, but low activity and employment rates (currently at 56%, the lowest in EU25). Not only does this phenomenon hinder the economic growth processes, but also social security imbalances are reinforced (low number of working in comparison to social transfer recipients). Currently average exit age falls short of 58 years (with legal ages of 60 for women and 65 for men), while employment rate for 55+ age group amounts to only 28% (55 till retirement *de iure*). High unemployment rate among young workers (34% for workers fewer than 24 years) and highest gender gap in the 25-29 age groups suggest that entering the labour market – and commencing an adult life – is particularly difficult.

All these data show, that labour market policies oriented on stimulating employment rate should focus on activation of youth (both male and female), female returnees (especially with none or little professional experience) and retaining 50+ and 55+ age groups. These is reflected as of 2004 in legislation, which specifies these groups as more vulnerable and requiring support from public employment services. Naturally, to assure efficiency, these policies should evolve in different directions depending on additional conditions, e.g. targeted group living in the rural areas, etc., which is not explicitly imposed by legislation.

On the contrary to the low employment and high unemployment rates, unregistered employment is of significant proportions, especially in the case of seasonal workers and supplementary income. With high tax wedge, low skilled positions are particularly strongly bound to demand unregistered labour. This is an important context for ALMPs efficiency for two main reasons. First, re-training in these domains may in fact be counter-effective, because unemployed after the programmes would be expected to assume positions with remuneration comparable to their pre-training shadow income. Secondly, some of the workers may find it more beneficial to remain at relatively low compensation in the shadow economy than to exhibit considerable effort to improve skills, because their net increase in remuneration might indeed be low. This last effect might be especially pronounced in the periods of labour market tightness. On the other hand, micro-level evidence suggests that on average workers in the shadow economy receive compensation lower than their counterparts with formal employment contracts, Cichocki and Tyrowicz (2009), which points to labour market segmentation and exclusion as important labour market governing rules.

3.1. The means of ALMPs

In Poland, Public Employment Services (PES) is the main actor in defining and implementing ALMPs. They are subordinate to the public administration (at both regional and local level), thus being only marginally responsive to central policies other than general legislation changes. They struggle with underinvestment both in terms of IT and in terms of HR (employment officers and managers constitute only 29% of the PES employees). On average there are 1600 unemployed per one job broker and over 4600 per one job counsellor.

ALMPs are financed from the Employment Fund (and so are financed passive labour market policies), which originates solely from employers contributions, currently at 0.22% of GDP (with the benefits its 0.8% of GDP). Poland is the only country in Europe with no budgetary contribution to ALMPs. At the same time, ALMPs instruments are highly regulated. They comprise subsidised employment (public work schemes – despite their low efficiency, strongly preferred by local authorities – and public service employment), on-the-job training and scholarships for youth, specific and general training (including the ability to navigate on the labour market). Finally, there are also instruments supporting self-employment (micro-enterprise development) and a subsidy for creating new jobs. As of 2004 European Social Fund means are used for employment policy as well, which allowed increasing the ALMPs spending from roughly PLN 0.4bln to PLN 2.2bln over a decade 1997-2006, approximately by 30% annually, while the proportion should continue in 2007 – 2013.

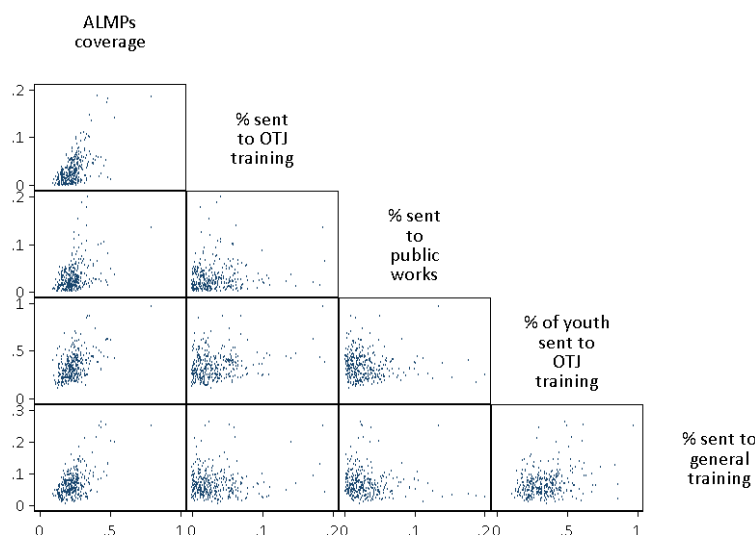


Figure 2. The heterogeneity in the use of instruments by PES in Poland (average over 2006)¹

Increase in financing has been accompanied by changing the instruments to be used as of 2004², albeit in an extremely heterogeneous way. Figure 2 presents the correlation matrix for basic instruments. Visibly, there seems to be large differentiation in the use of instruments as well as overall coverage. Across NUTS4 units (*poviats*) coverage ranges between 5% and 45% of the unemployed population. With particular instruments, there is also a considerable heterogeneity, while it is not necessarily true that in regions with higher coverage rates, all instruments are used more extensively³. Importantly, the decisions about the use of instruments and coverage with reference to particular groups are at the discretion of a local labour market office, while the overall budget is the main constraint. NUTS2 authorities, who allocate funding among NUTS2 units sometimes – but not universally across Poland – require commitment to some minimum achievement levels in particular groups, but no targets are set. Thus, it seems that due to the institutional design, endogeneity between the characteristics of the local labour market and ALMPs financing should not be a big issue.

On the other hand, financing of ALMPs is distributed to NUTS2 regions according to an algorithm, which gives a premium to regions with higher than average number unemployment rate, number of unemployed and worse than average structure of unemployed (e.g. share of long-term unemployed). Consequently, the algorithm favours more troubled regional labour market, while NUTS2 level authorities frequently replicate this algorithm when dividing financing to NUTS4 units⁴.

High variability of both coverage and instruments used – both the growing trend across time and the differentiation across regions – utters PES independence. On the other hand, unemployment rate evolutions across local labour markets are very heterogeneous too and with some steady and stark disparities. Tyrowicz and Wójcik (2007), using kernel density estimates, have demonstrated that the distributions of unemployment rate are essentially unaffected by general labour market trends, while Tyrowicz and Wójcik (2009) employed stochastic convergence concept and found that the effects of initial shock do not fade out at all in the case of majority of Polish local labour markets (while they are less persistent for Slovakia and definitely fade out for Czech Republic NUTS4 units). This

¹ In the case of on-the-job-training (OTJ training) for the youth, the share is specified by the number of under 25/27 years of age in this form of programmes with reference to the number of youth registered as unemployed. The 25/27 years of age boundary is conditional on educational attainment – for university graduates it is 27 years, while for everyone else it is 25 years.

² Only as of mid-2004 reporting includes the usage of instruments and particular expenses allocated to different ALMPs. Therefore, in the remainder of the paper, whenever we demonstrate the instruments separately, it represents an average of instruments usage over 2007 for each NUTS4 unit (*poviat*). In the regressions, general estimates of coverage and expenses are used, without controlling for different instruments, as this would narrow the sample to only three years.

³ Detailed histograms of the instruments usage are reported in Appendix of this paper.

⁴ NUTS2 level labour offices (regional labour offices) do not implement any labour market instruments – either passive or active.

heterogeneity on both ends might indeed be causal (even with potential reverse causality), while the channel to best explore the potential links is through the inflows and outflows rates.

3.2. Inflows and outflows

Also the inflow and the outflow rates demonstrate high variation, both in time and across units, Figure 3. With reference to inflows and outflows from the unemployment pool, little analysis has been done so far at a local level, namely due data shortages. The importance of inflows and outflow rates for the determination of local unemployment rates and their convergence cannot be overstated, while it has also been recognised in the literature. For example, Newell and Pastore (1999) argue that it is the hazard of job loss differentiating for employees with longer tenure that drives the regional differences over the period of 1995-1999. Unfortunately, they use data for the former administrative structure, which forced them to essentially resort to 49 NUTS3 level, which at the time was not a policy relevant level. As of 1999, 380 NUTS4 units (*poviats*) were established, while policy is actually implemented at this level. The main reason why this differentiation is important for the analysis of ALMPs is that NUTS4 units do not exhibit any convergence whatsoever to NUTS2/3 nor to the national average over the 1999-2008 period, Tyrowicz and Wójcik (2009). Therefore, aggregation of data actually blurs the picture and may sometimes lead to misleading results.

Importantly, the ratio of inflows and outflows seems fairly stable across time. It has been observed at aggregate level that inflows/outflows ratio has been fairly constant throughout most of the period. Strawinski (2008) demonstrates even using labour force survey data that flows into unemployment do not reproduce the dynamic patterns observed in the unemployment rate, while the only flow that exhibits these dynamics is the one in the opposite direction. Also, throughout the entire period, inflows have been larger than outflows, while this finding from the aggregate level seems to hold also universally across all NUTS4 units.

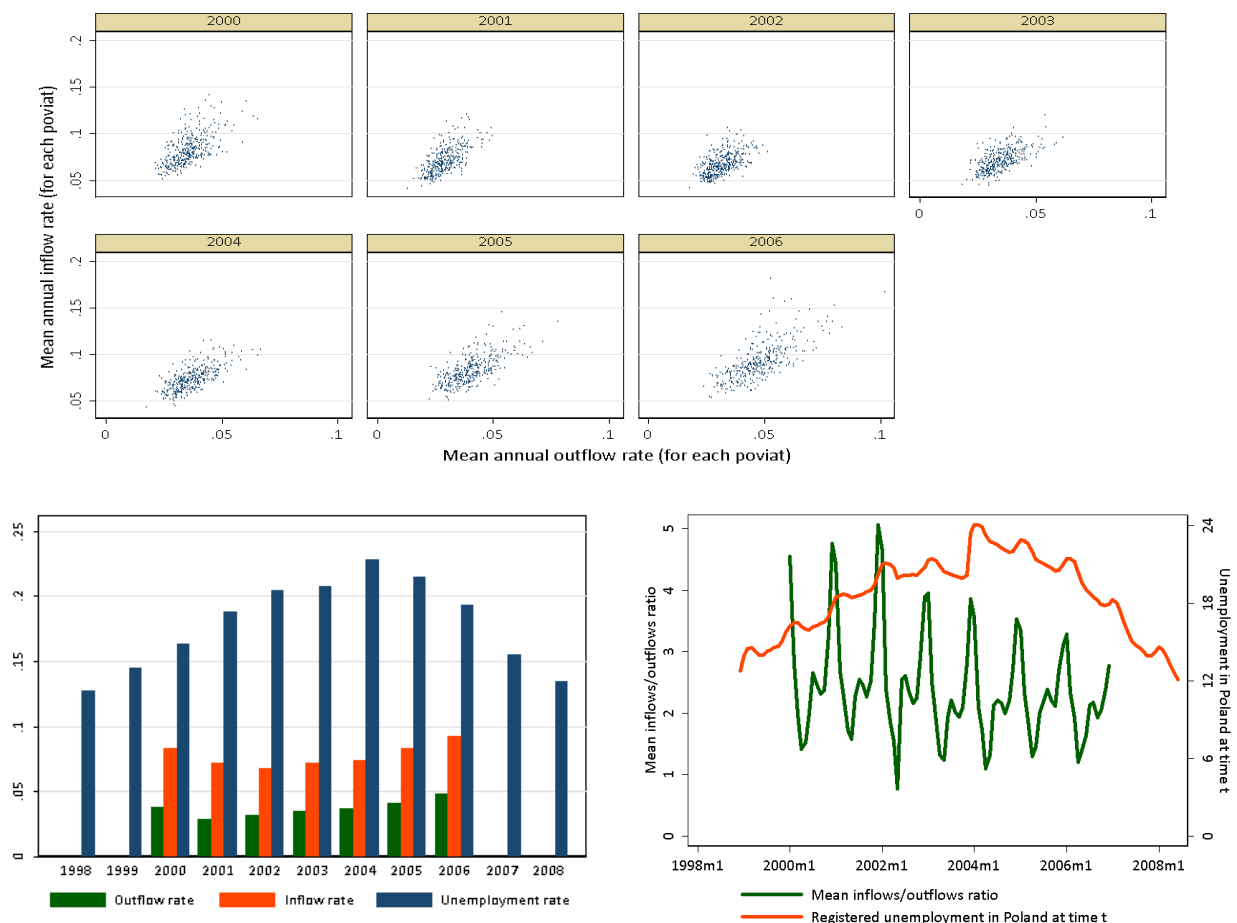


Figure 3. Aggregate (upper) and per *poviat* (lower left) inflow and outflow rates as well as inflow/outflow ratios (lower right)

Importantly, heterogeneity seems to shrink in the periods of worse labour market outlooks and expands over the up swings in the cycle. Notwithstanding, the values of inflows/outflows ratio throughout the entire period have been extremely both volatile and stable. Volatility is visible in extreme seasonality of this variable, ranging between 1 and as much as 5 over 2000-2002. This extreme range lowered slightly with the general improvement in the labour market outlooks, still however reaching even the level of 2.5-3 in the winter months. On the other hand, despite these improvements, lower boundary remained at constant level of slightly above unity. This stability demonstrates that even “in the good times” average ratio implies equalisation of inflows and outflows⁵. In other words, catching up would only be possible if high unemployment *poviats* had lower ratios as opposed to the more those in generally more favourable situation who should be characterised by higher ratios. This prediction will be tested with the use of actual as well as fitted ratio values.

To summarise, we use an extensive dataset for 380 Polish NUTS4 units over the timespan of 2000-2007⁶. Data come from the monthly reports of local labour offices to the Ministry of Labour and Social Affairs and is not available beyond these time boundaries. We matched these reports with the registered unemployment rate statistics provided also monthly by the Central Statistical Office at NUTS4 level (equivalent to the administrative area under the influence of particular labour office)⁷. Based on the raw data from monthly reports we have constructed a number of variables measuring or proxying the processes of interest. Unfortunately, we were unable to use detailed data on the use of particular labour market instruments, because data in this respect is only available for the last two years of the sample, which would limit considerably the scope of this study.

4. Methodology and results

We have two empirical aims: (i) verify whether the unemployment dynamics in more troubled regions permit catching up and (ii) assess whether the ALMPs actually contribute to alleviating the local labour market disparities. We approach these problems by analysing inflows and outflows rates as well as the interplay between the structural conditions, active labour market policies and the inflows/outflows ratio. The empirical strategy may be summarised as follows. We first inquire if – controlling for structural characteristics – heterogeneity of outflows rates is affected by the heterogeneous use of ALMPs across local labour offices in Poland. We measure the ALMPs by coverage (the share of unemployed in any form of treatment), intensity of treatment (the average cost of treatment per one person in treatment) and its extensiveness (the average cost of treatment per one unemployed). All these measures are constructed at NUTS4 level for each month of 2000-2007 time span. Naturally, because these are relatively high frequency data, past ALMPs spendings might affect the current outflows rate. Therefore, we have introduced the last variable proxying for the use of ALMPs, namely the share of spending by this particular NUTS4 unit in the national ALMPs expenses as of January of the particular year up to each consecutive month. To avoid the problems associated with the presence of large and small *poviats* in the sample, we have scaled this variable by the inverse of the share of unemployed registered in this particular local labour market in national unemployment pool.

Except for estimating the outflows equation, we intend to obtain a counter-factual inflows/outflows ratio, which necessitates the second regression. To this end, we implement seemingly unrelated regressions (SURE) approach. There are two main motivations for use of SURE. The first one is to gain efficiency in estimation by combining information on different equations⁸. SURE is based on the idea of a set of equations, where the disturbances are correlated across equations, in our case: local labour markets. Various methods have been employed to estimate such a set of equations in

⁵ In principle, this necessitates that the eventual reductions in the unemployment rates are an effect of higher labor market exits (to inactivity) than entries (from schooling or inactivity).

⁶ In fact, some of the NUTS4 units were only established as of January 2001, by separating cities and their surroundings into separate administrative units. Consequently, the number of units increased from roughly 350 to 380. In fact, our dataset contains approximately 420 units, because after the separation two distinct units should be analysed for the differences in unemployed characteristics and labour market opportunities.

⁷ This is a unique dataset and is used for the first time, to the best of our knowledge.

⁸ Zellner (1962) provided the seminal work in this area, and a thorough treatment is available in the book by Srivastava and Giles (1987). A recent survey can be found in Fiebig (2001).

an attempt to exploit the information in the correlated errors, either contemporaneously or autoregressively, in order to achieve greater efficiency in the estimates. If two estimated equations are linked by the potential correlation in their standard errors, typical OLS estimators will remain unbiased and consistent for each separate equation, but because the approach ignores the correlation of the disturbances the estimates will not be efficient. In this particular case – due to the considerable heterogeneity of analysed units, efficiency of estimators is actually a matter of concern.

In the first stage we estimate the following system of equations

$$INFLOWS_{i,t} = \alpha_i^{IN} + \beta^{IN} * \Sigma_{i,t} + \gamma^{IN} \Pi_{i,t} + \varepsilon_{i,t}$$

$$OUTFLOWS_{i,t} = \alpha_i^{OUT} + \beta^{OUT} * \Sigma_{i,t-1} + \gamma^{OUT} \Pi_{i,t-1} + \varepsilon_{i,t}^{OUT}$$

where $\Sigma_{i,t}$ denotes structural controls, including unemployment rate (both national average and local one), share of youth, females, long-term unemployed and those who live in the rural areas in the pool of unemployed registered in *poviat* *i* at time *t*. Similarly, $\Pi_{i,t}$ denotes policy variables, i.e. coverage (share of unemployed in any treatment), intensity (average cost per treated) and extensiveness (average cost per unemployed) of ALMPs in *poviat* *i* at time *t*. As has been suggested earlier, there may be also a kind of “cumulative” or long-term effect of ALMPs, which necessitates the inclusion of the share of spending by particular *poviat* *i* at time *t* in national spending since the beginning of each year. Including national average in the model plays the role of time fixed effects. At the same time, model comprises unit fixed effects (dummies for each *poviat*). Equations were estimated with the use of iterated SURE, which essentially employs maximum likelihood estimator instead of a standard OLS in each of the equations. Results are reported in Table 1.

Table 1. Estimation results

Models Equation Variables	ISURE (MLE)	
	Outflows (1)	Inflows (2)
National unemployment at time t	0.000505*** (5.59e-05)	-0.00051*** (8.18e-05)
Unemployment in <i>poviat</i> <i>i</i> at time t	-0.000122*** (1.19e-05)	-0.00025*** (1.75e-05)
Lagged inflows rate		0.547*** (0.00560)
Spending per treated	0.000206 (0.000555)	
Spending per unemployed	0.00134*** (0.000452)	
Share of unemployed in treatment	-0.00102** (0.000456)	
Share of spending in national allocation	-0.133*** (0.0348)	
Share of unemployed living in rural areas	-0.00340*** (0.000614)	
Share of unemployed with no or low skills	0.117*** (0.0106)	
Share of unemployed under 25/27	0.0165*** (0.00165)	
Share of unemployed over 50/55+	0.00733*** (0.00157)	
Share of long term unemployed	-0.00829*** (0.00251)	
Share of females	0.0220*** (0.00250)	
Lagged share of females		0.0737*** (0.00283)
Lagged share of elderly		0.00916***

		(0.00229)
Lagged share of LTU		-0.00745***
		(0.00128)
Lagged share of youth		-0.0190***
		(0.00237)
Lagged share of living in the rural areas		-0.000333
		(0.000925)
Lagged share with no or low skills		0.129***
		(0.0154)
Lagged outflows rate	0.562***	
	(0.00558)	
Constant	-0.00238	0.0134***
	(0.00202)	(0.00249)
Observations	22152	22152
R-squared	0.446	0.497
Breusch-Pagan test (H0: independence)		Rejection

Source: Own computations based on local PES monthly reports to MLandSA over 2000-2007. ***, ** and * denote significance levels of 1%, 5% and 10% respectively

The performance of inflows equation is better than for the outflows, while both included lagged values (ADL specification) to immune the estimators of the potential hysteresis and persistence. All structural variables prove significant and have expected signs. Rural *poviats* are characterised by lower outflow rates (less dynamic labour markets), while inflow rates do not seem to be affected by the character of the local labour market. Higher share of unemployment among the youth and low-skilled coincides with higher outflow rates due to fact that typically dynamic labour markets exhibit more demand for labour, leaving in general less people without employment opportunities. Consequently, the share of youth and low-skilled among the unemployed needs to be relatively higher. This is consistent with finding a negative estimator of the share of long-term unemployed, since with the growth of this population among unemployed there are less chances of effectively putting PES beneficiaries in employment. Please, recall that outflow rate figures were on average relatively low, approximately 3.7% each month with the minimum of 0.02% and a maximum of 16%.

As to the inflow rates, past structure seems to be a pretty good predictor of the future inflows. Namely, lower shares among youth and LTU – both correlating with better employment opportunities – are associated with lower inflows. Similarly, higher shares of people without skills and those who live in the rural areas seem to be positively correlated with higher future inflows into employment. These phenomena have been addressed by researchers (e.g. Marody and Poleszczuk, 2008) and are believed to be linked by the “inheritance of unemployment” typical for some regions of Poland.

The results for policy variables are not speaking in favour of ALMPs efficiency hypothesis. Namely, intensity of treatment remains consistently insignificant irrespectively of specification. This suggests that high-cost treatments (e.g. trainings) do not seem to result in higher outflows rates. The accumulated effect is significant, but in fact negative – the more financing a particular region receives, the lower the impact on outflows into employment. Extensiveness measures are significant and positive; suggesting that availability of funds actually plays a positive role. At the same time, coverage is not significant – it does not seem to be “any” programme that matters. All in all, these results do not seem to confirm the hypothesis of the overall ALMPs efficiency. However, one could raise many doubts as to the reliability of the policy estimators in this equation. Namely, the accumulated effects may go beyond one year, while poor performance of policy variables may also follow from the fact that units are so heterogeneous in their structures and the use of instruments.

To this end, we have saved the predicted values of inflows and outflows rates and computed a “fitted inflows/outflows ratio” for each *poviat* i at each time t . More specifically, we have included only structural variables in the outflows equation (no $\Pi_{i,t}$ variables), which permits us to obtain a counterfactual outflow rate, had there been no ALMPs implemented. This obtained ratio is in some cases higher and in some cases lower than the actual inflows/outflows ratio. Below, using graphical analysis, we demonstrate whether the over/underperformance of the fitted ratio coincides with the use of ALMPs. Please note, that we do not actually predict the ratio, but separately in the SURE

framework the inflows rate and the outflows rate. The ratio is computed based on these two predictions, which implies it may be contaminated not by one but by two error terms⁹. By subtracting from the actual ratio the “fitted” one, we have constructed a simple measure which shows over/underperformance relative to a counterfactual benchmark. Namely, for the negative values of this “residual”, we can state that actual ratio has been lower (i.e. labour market performance better), while the fitted value which is conditioned only on structural and macroeconomic factors is less favourable. Conversely, positive values of residual indicate that actually local labour market performed worse than the model would have predicted. The purpose of this exercise is following: if we can demonstrate that the negative values of the residual are associated with the use of ALMPs, we find indirect positive effect of activation efforts by PES. In other words, we seek negative coefficients on policy variables in the “residual” regression. This question is approached both graphically and by a robust panel data fixed effect model. More specifically, we estimate the following equation:

$$RESIDUAL_{i,t} = \alpha_i + \beta_i * \Sigma_{i,t} + \gamma_i \Pi_{i,t} + \varepsilon_{i,t}$$

with the notation used before. As control factors in $\Sigma_{i,t}$ we have included national and local unemployment rate and structural characteristics. The model was estimated as OLS with robust standard errors, as panel-corrected heteroscedasticity and autocorrelation consistent standard errors and as GLS. Results are reported in Table 2.

Table 2. Indirect effects of ALMPs on local labour markets performance

Variables	(1)	(2)	(3)
Local unemployment rate	-0.0254*** (0.00571)	-0.0141*** (0.00113)	-0.0117*** (0.00330)
National unemployment rate	0.0155** (0.00786)	0.0177*** (0.00541)	0.238*** (0.0589)
Structural controls	Included and significant	Included and significant	Included and significant
Spending per one unemployed	-0.662*** (0.0522)	-0.134*** (0.0435)	-0.442 (0.359)
Share of spending in total national ALMPs spending	-56.49*** (12.68)	-19.36*** (3.336)	-11.40 (9.172)
Share of people in any treatment	0.270*** (0.0435)	0.230*** (0.0439)	0.524** (0.230)
Spending per one person in any treatment	0.142** (0.0553)	0.114** (0.0537)	0.267 (0.427)
Observations	22 827	22 827	22 827
R-squared	0.26	n.a.	0.30
X ² statistic	47.01	661.47	11.07
Method of estimation	FE OLS	FE GLS	FE PCSE

Source: Own computations based on local PES monthly reports to MLandSA over 2000-2007. *Note:* panel-corrected standard error (PCSE) estimates for linear cross-sectional time-series models where the parameters are estimated by Prais-Winsten regression. PCSE estimation allows effectiveness even in the presence of AR(1) autocorrelation within panels and cross-sectional correlation and heteroscedasticity across panels. Robust standard errors reported. Year dummies significant (not reported, available upon request) Structural estimators included but not reported, available upon request, individual effects included but not reported. Constant included but not reported. ***, ** and * denote significance levels of 1%, 5% and 10% respectively

⁹ Appendix presents the graphs (by year) of the actual versus fitted ratios. There do not seem to be large discrepancies in the relation between them across time, which implies the model captures large swings in the labour market outlooks we observed over the analysed period.

Results are fairly consistent, although the performance of PCSE estimator is lowest, while the relatively large size of the standard errors makes some of the variables insignificant. Still, the signs and the order of magnitude remain unaffected by the method of estimation. While positive indirect effect of ALMPs on local labour markets performance would require the estimated parameters to be negative, only extensiveness measure (spending per one unemployed) and long-term effect measure (share of spending in total national ALMPs spending) fall short of zero. Both coverage and intensity measures have positive signs. While for the two latter measures graphical analysis provides no further insights, the reliability of the first two is somewhat undermined. Figure 4 scatters the policy measures against the actual values or residuals across time and *poviats*. Namely, the negative coefficients found on extensiveness and accumulated variables seem to both follow from a small group of outliers with very high values of these predictors. Most of the dots are spread flat with heterogeneity understandably increasing in the proximity of 0 values for the residual. Graphical inspection does not seem to reveal any actual difference between the two groups of measures in Table 2.

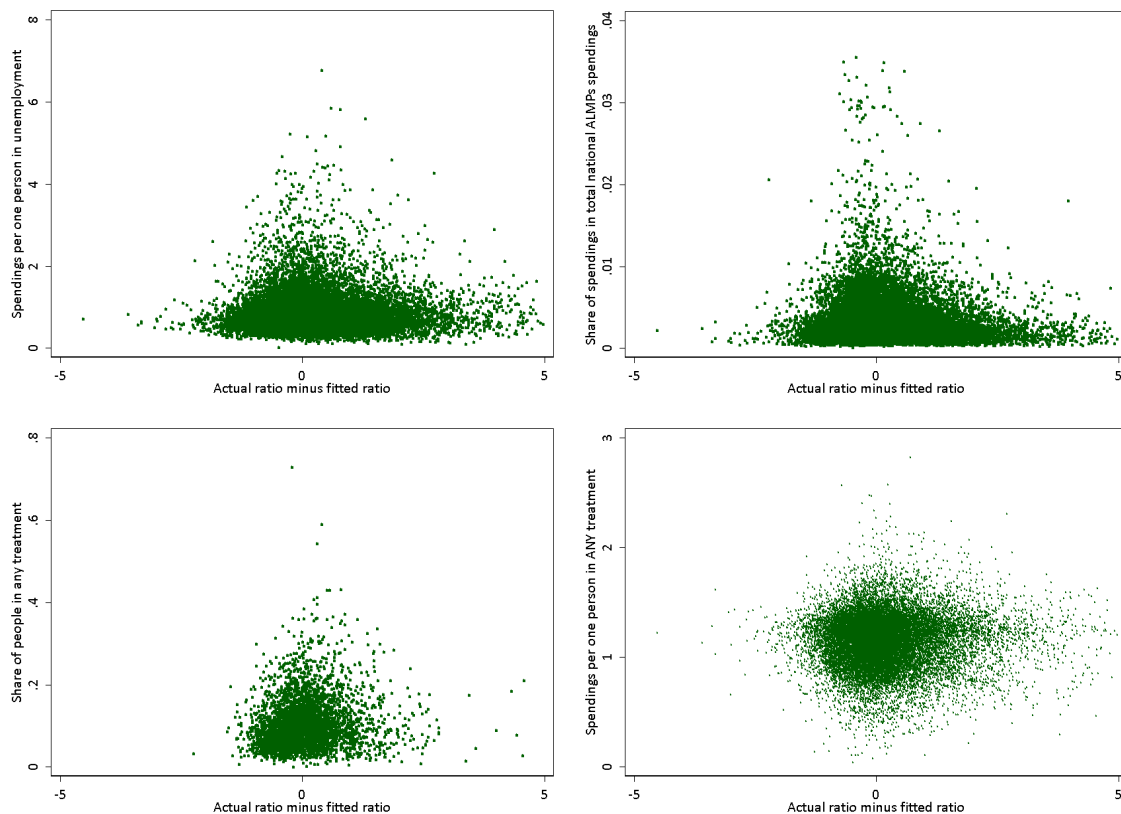


Figure 4. Indirect effects of ALMPs on local labour market performance

Summarising, the literature traditionally assumes that diversification of the use and coverage of cohesion policies provides sufficient variation to derive conclusions regarding the effectiveness of cohesion efforts. Our main empirical purpose here was to inquire the whether convergence may be achieved with the use of ALMPs by inquiring the effect of ALMPs on outflows rate (directly) and inflows/outflows ratio (indirectly). We used policy relevant NUTS4 level data, since actual labour market policies - with special emphasis on the active ones - are performed at exactly this level. Time span in this study allows covering both the up and the down cycles in labour market conditions, which guarantees that the results are not trend driven.

We found that even if statistically one can demonstrate the relevance of ALMPs for unemployment disparities alleviation, these results are not reliable (dependence on outliers) and point largely to the inefficiency of ALMPs implementation at the local level. Neither coverage nor the cost of treatment affect significantly outflows rate. They remain insignificant when the indirect approach is used as well. We confirmed significance (and adequate signs) on the extensiveness and accumulation

measures (average cost per unemployed and share of spending in national ALMPs spending), but these proxy more for the finance availability than for the actual policies. One could derive a conclusion that local PES with more resources tends to over perform the majority, but this conclusion is weak in a sense that the means of over performance (higher coverage or higher cost of treatment) were not confirmed empirically.

5. Conclusions

Transition economies typically experienced rapid growth of the unemployment rates due to profound restructuring. Naturally, these processes affected local labour markets asymmetrically, since regions were diversified with respect to industry composition and economic outlooks. Tyrowicz and Wojcik (2009) demonstrate that diverging unemployment rates' patterns seem nested in the data for transition countries. This paper demonstrates that much of the observed effect currently may be attributed to the lack of ALMPs effectiveness, i.e. not the consequence of transition hardship, but the mistakes made right now.

Financing ALMPs plays an important role in improving the management of ALMPs in general. There is still a lot to be done to assure sensible labour market interventions in order to appropriately respond to the key labour market difficulties and challenges, not allowing any important risk groups to fall out of the horizon. Thus, one has to derive conclusions from the experience of implementing ALMPs so far by approaching the following issues. It seems that one can attribute these findings to the usual suspects found frequently in the literature. Ability to diagnose and forecast in a longer-term perspective taking the view of differentiated groups (and stakeholders!) on the labour market is especially viable in local context, thus providing a challenge for PES, but also to local authorities as well as some other institutions that can affect employment policies. Creating framework for mutual responsibility in labour market policies shared by differentiated stakeholders (local authorities, PES, educational institutions, employers, NGOs, etc) seems key but also difficult. From the other end, there seems to be a need for the programming of the labour market policies with the orientation to efficiency. The urging need for individualisation in projects and labour market services in general is crucial for efficient treatment. In general, ALMPs need to be put into management-by-objectives framework. Finally, diversity of risk groups needs to be reflected in the diversity of tools and instruments – problems and challenges of the Polish labour market are highly differentiated.

All these problems need to be viewed in core-periphery dichotomy with special focus on rural areas. All these conclusions and recommendations point to the direction of making better use of ALMPs financing in employment policies as well as increasing the efficiency of ALMPs.

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7. Bibliography

- [1] Armstrong, H. and Taylor, J., (2000), *Regional Economics and Policy*, 3rd edn, Blackwell.
- [2] Boeri, T. and Terrell, K., (2002), *Institutional Determinants of Labor Reallocation in Transition*, in: *Journal of Economic Perspectives*, 16(1), pp.51–76.
- [3] Breitung, J. and Meyer, W., (1994), *Testing for Unit Roots in Panel Data: Are Wages on Different Bargaining Levels Cointegrated?*, Technical Report 4
- [4] Boeri, T., (1994), *Labour Market Flows and the Persistence of Unemployment in Central and Eastern Europe*, in: *OECD (ed.): Unemployment in Transition Countries: Transient or Persistent?* pp. 13-56, Paris: OECD.

- [5] Boeri, T., (1996), *Unemployment Outflows and the Scope of Labour Market Policies in Central and Eastern Europe*, in: OECD (ed.): *Lessons from Labour Market Policies in Transition Countries*, pp. 41-70, Paris: OECD.
- [6] Betcherman, G., Olivas, K. and Dar, A., (2004), *Impacts of Active Labor Market Programs: New Evidence from Evaluations with Particular Attention to Developing and Transition Countries*, World Bank Social Protection Discussion Paper Series, Discussion Paper No 0402
- [7] Buettner, T., (2007), *Unemployment Disparities and Regional Wage Flexibility: Comparing EU Members and EU-accession Countries*, *Empirica* 34, pp. 287–297.
- [8] Calmfors, L., (1993), *Centralisation of Wage Bargaining and Macroeconomic Performance: A Survey*, OECD Economics Department Working Papers 131, OECD Economics Department.
- [9] Calmfors, L., Forslund, A. and Hemström, M., (2002), *Does Active Labour Market Policy Work? Lessons from the Swedish Experiences*, Seminar Papers 700, Stockholm University, Institute for International Economic Studies.
- [10] Calmfors, L. and Skedinger, P., (1995), *Does Active Labour Market Policy Increase Employment? Theoretical Considerations and Some Empirical Evidence from Sweden*, in: *Oxford Review of Economic Policy*, 11(1), pp. 91-109.
- [11] Camarero, M., Carrion-i Silvestre, J. L. and Tamarit, C., (2006), *Testing for Hysteresis in Unemployment in OECD Countries: New Evidence Using Stationarity Panel Tests with Breaks*, in: *Oxford Bulletin of Economics and Statistics*, 68(2), pp. 167–182.
- [12] Carlino, G. A. and Mills, L. O., (1993), *Are U.S. Regional Incomes Converging? A Time Series Analysis*, in: *Journal of Monetary Economics*, 32(2), pp. 335–346.
- [13] Cichocki S. and Tyrowicz, J., (2009), *Shadow Employment In Transition: A Matter of Choice or No Choice*, WNE UW Working Paper No 7(17)
- [14] Csillag, M., Schneider, H., Uhlendorff, A and Zhao, Z., (2006), *The Impact of Labor Market Reform on the Effectiveness of Training Programs in Germany*, Institut Zur Zukunft Der Arbeit, IZA Discussion Paper No
- [15] Dar, A. and Tzannatos, Z., (1999), *Active Labor Market Programs: A Review of the Evidence from Evaluations*, Social Protection Discussion Paper No.9901.
- [16] Decressin, J. and Fatas, A., (1995), *Regional Labour Market Dynamics in Europe*, in: *European Economic Review*, 39(9), pp. 1627-1655
- [17] Dixon, R., Shepherd, D. and Thomson, J., (2001), *Regional Unemployment Disparities in Australia*, *Regional Studies* 35(2), pp. 93–102.
- [18] Fiebig, D. G., (2001), *Seemingly Unrelated Regression*, in Baltagi, B. ed, *A Companion to Theoretical Econometrics*
- [19] Ferragina, A. M. and Pastore, F., (2008), *Mind the Gap: Unemployment in the New EU Regions*, in: *Journal of Economic Surveys* 22(1), pp. 73–113, Blackwell Publishers, 0101-121.
- [20] Fares, J. and Tiongson E. R., (2008), *Youth Unemployment, Labor Market Transitions, and Scarring: Evidence from Bosnia and Herzegovina, 2001-2004*, *mimeo*, World Bank
- [21] Flek, V., Galuscak, K., Gottvald, J., Hurnik, J., Jurajda, S. and Navrati, D., (2004), *Anatomy of the Czech Labour Market: From Over-Employment to Under-Employment in Ten Years?* Working Papers 2004/07, Czech National Bank, Research Department.
- [22] Godfray, M., (2003), *Youth Employment Policy in Developing and Transition Countries - Prevention as well as Cure*, World Bank Social Protection Discussion Paper Series, DP No 0320
- [23] Gomes, F. A. R. and da Silva, C. G., (2006), *Hysteresis vs. Nairu and Convergence vs. Divergence: The Behavior of Regional Unemployment Rates in Brazil*, Technical report.

- [24] Góra, M. and Lehman, H., (1995), *How Divergent is Regional Labour Market Adjustment in Poland?*, in S. Scarpetta and A. Wörgötter (eds), *The Regional Dimension of Unemployment in Transition Countries. A Challenge for Labour Market and Social Policies*, OECD
- [25] Góra, M., Lehmann, H., Socha, M. and Sztanderska U., (1996), *Labour Market Policies in Poland*, in: OECD (ed.): *Lessons from Labour Market Policies in Transition Countries*, pp. 151-176, Paris: OECD.
- [26] Gray, D., (2004), *Persistent Regional Unemployment Differentials Revisited*, *Regional Studies* 38(2), pp. 167–176.
- [27] Grotkowska, G., (2006), *The Case of Poland - Recent Changes of Non-standard Employment and Labour Market Flexibility*, in C. Kohler, K. Junge, T. Schroder and O. Struck (eds), *Trends in Employment Stability and Labour Market Segmentation*, SFB 580 Mitteilungen, Universität Jena.
- [28] Grubb, W. and Ryan, P., (2000), *The Roles of Evaluation for Vocational Education and Training*. ILO, Geneva.
- [29] Hagen, T., (2003), *Three Approaches to the Evaluation of Active Labour Market Policy in East Germany Using Regional Data*, Technical report.
- [30] Huber, P., (2007), *Regional Labour Market Developments in Transition: A Survey of the Empirical Literature*, in: *European Journal of Comparative Economics* 4(2), pp. 263 – 298.
- [31] Hujer, R., Caliendo, M. and Thomsen, S., (2004), *New evidence on the effects of job creation schemes in Germany – a matching approach with threefold heterogeneity*, *Research in Economics: An International Review of Economics* 58, pp. 257-302.
- [32] Hujer, R., Thomsen, S.L. and Zeiss, Ch., (2006), *The Effects of Short-Term Training Measures On the Individual Unemployment Duration in West Germany*, mimeo, ZEW Mannheim
- [33] Im, K. S., Pesaran, M. H. and Shin, Y., (2003), *Testing for Unit Roots in Heterogeneous Panels*, in: *Journal of Econometrics*, 115(1), pp. 53–74.
- [34] Kaczmarczyk, P. and Tyrowicz, J., (2008), *Współczesne procesy migracyjne w Polsce (Contemporaneous Migration Processes from Poland)*, Fundacja Inicjatyw Społeczno-Ekonomicznych, Warszawa.
- [35] Kwiatkowski, E. and Tokarski, T., (1997), *Active Labour Market Policies in Poland*, An Augmented Matching Function Approach, Institute of Economics, University of Lodz, mimeo.
- [36] Kwiatkowski, E. and Kubiak, P., (1998), *On Some Determinants of Regional Unemployment in Poland in Transition*, Institute of Economics, University of Lodz, mimeo.
- [37] Lechner, M., Vazquez-Alvarez, R., (2005), *Stochastic labour market shocks and Active labour market policies: a theoretical and empirical analysis*, mimeo
- [38] Lehmann, H., (1995), *Active Labor Market Policies in the OECD and in Selected Transition Economies*, World Bank Policy Research Working Paper No.1502, Washington D.C.
- [39] Lehmann, H. and Walsh, P., (1998), *Gradual Restructuring and Structural Unemployment in Poland: A Legacy of Central Planning*. mimeo, LICOS, Centre for Transition Economies, Katholieke Universiteit Leuven, Leuven.
- [40] Levin, A., Lin, C.-F. and Chu, C.-S., (2002), *Unit Root Tests in Panel Data: Asymptotic and Finite-sample Properties*, in: *Journal of Econometrics* 108(1), pp.1–24.
- [41] Maddala, G. S. and Wu, S., (1999), *A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test*, in: *Oxford Bulletin of Economics and Statistics* 61(0), pp.631–52
- [42] Marelli, E., (2004), *Evolution of employment structures and regional specialisation in the EU*, in: *Economic Systems* 28(1), pp. 35-59.
- [43] Martin, E., (2006), *The Impact Upon Employment of the Decline in Danube Transport*, in: *South-East Europe Review* 1(1), pp. 81–88.

- [44] Martin, J., (2000), *What Works among Labor Market Policies: Evidence from OECD Countries' Experiences*, in: *OECD Economic Studies*, No.30.
- [45] Martin, J.P. and Grubb, D., (2001), *What works and for whom: a review of OECD countries' experiences with active labour market policies*, IFAU Working Paper 2001:14.
- [46] Newell, A. and Pastore, F., (1999), *Structural Unemployment and Structural Change in Poland*, in: *Studi Economici*, Vol. 69(3), pp. 81–100.
- [47] Münich, D., Svejnar, J. and Terrell, K., (2000), *The Worker-Firm Matching in the Transition: (Why) Are the Czechs More Successful than Others?*, Working Paper 107, The William Davidson Institute
- [48] Ng, S. and Perron, P., (1995), *Estimation and Inference in Nearly Unbalanced, Nearly Cointegrated Systems*, in: *Cahiers de recherche 9534*, Centre interuniversitaire de recherche en économie quantitative, CIREQ.
- [49] O' Leary, C., Nesporova, A. and Samorodov, A., (2001), *Manual on Evaluation of Labor Market Policies in Transition Economies*. International Labour Office
- [50] Obstfeld, M. and Peri, G., (1998), *Regional nonadjustment and fiscal policy: lessons from EMU*, NBER Working Paper 6431, NBER.
- [51] van Ours, J. and Vodopivec, M. (2005), *How Changes in Benefits Entitlement Affect Job-Finding: Lessons from the Slovenian "Experiment"*, World Bank Employment Policy Primer, April 2005
- [52] Overman, H. and Puga, D., (2002), *Regional Unemployment Clusters*, in: *Economic Policy*, Vol. 17(34), pp. 117-147.
- [53] Pehkonen, J. and Tervo, H., (1998), *Persistence and Turnover in Regional Unemployment Disparities*, in: *Regional Studies*, Vol. 32(5), pp. 445–458.
- [54] Perugini, C., Polinori, P. and Signorelli, M., (2005), *GDP Growth and Employment in EU's Member Regions: Convergence Dynamics and Differences for Poland and Italy*, EACES Discussion Paper 2, EACES.
- [55] Petrongolo, B. and Pissarides, C. A., (2001), *Looking Into the Black Box: A Survey of the Matching Function*, in: *Journal of Economic Literature*, Vol. 39(2), pp. 390-431.
- [56] Saczuk, K. and Tyrowicz, J., (2009), *Wage Inequalities Explosion Or Is It?* National Bank of Poland, *mimeo*
- [57] Sala-i Martin, X., (2002), *15 Years of New Growth Economics: What Have We Learnt?*, Technical report.
- [58] Sarno, L. and Taylor, M. P., (1998), *Real Interest Rates, Liquidity Constraints and Financial Deregulation: Private Consumption Behavior in the U.K*, in: *Journal of Macroeconomics*, Vol. 20(2), pp. 221–242.
- [59] Scarpetta, S. and Huber, P., (1995), *Regional Economic Structures and Unemployment in Central and Eastern Europe. An Attempt to Identify Common Patterns, The Regional Dimension of Unemployment in Transition Countries. A Challenge for Labour Market and Social Policies*, OECD.
- [60] Sciulli, D., (2005), *Making the Italian Labor Market More Flexible: An Evaluation of the Treu Reform*, *mimeo*
- [61] Silverman, B., (1986), *Density Estimation for Statistics and Data Analysis*, Chapman and Hall.
- [62] Srivastava, V. K. and Giles, D. E. A., (1987), *Seemingly Unrelated Regression Equations Models*, New York: Marcel Dekker Inc..
- [63] Svejnar, J., (2002a), *Labour Market Flexibility in Central and East Europe*, William Davidson Institute Working Paper, William Davidson Institute.

- [64] Svejnar, J., (2002b), *Transition Economies: Performance and Challenges*, in: *Journal of Economic Perspectives*, Vol. 16(1), pp. 3-28.
- [65] Tyrowicz, J., (2006), *Relations Between Public Employment Services and Labour Market Organisations: Results of a Quantitative Survey*, in: *NGOs On the Labour Market in Poland*, ed: Michał Boni, Ilona Gosk, Joanna Tyrowicz, Bartłomiej Piotrowski, Kuba Wygnański, Fundacja Inicjatyw Społeczno-Ekonomicznych, Warsaw, 2006 (in Polish)
- [66] Tyrowicz, J. and Wójcik, P., (2007), *Regionalna konwergencja bezrobocia w Polsce*, *Gospodarka Narodowa*, 5(2007)
- [67] Tyrowicz, J. and Wójcik, P., (2009), *Unemployment Convergence in Transition*, in: E. Marelli and M. Signorelli (eds), *Growth and Structural Features of Transition*, London Palgrave Macmillan
- [68] Vodopivec, M., Wörgötter, A. and Raju, D., (2003), *Unemployment Benefit Systems in Central and Eastern Europe: A Review of the 1990s*, March 2003, World Bank Social Protection Discussion Paper Series No. 0310
- [69] Vroman, W., (2002), *Unemployment Insurance and Unemployment Assistance: A Comparison*, World Bank Social Protection Discussion Paper, DP No 0203
- [70] Zellner, A., (1962), *An Efficient Method of Estimating Seemingly Unrelated Regression Equations and Tests of Aggregation Bias*, in: *Journal of the American Statistical Association*, Vol. 57, pp. 500-509.

Appendix

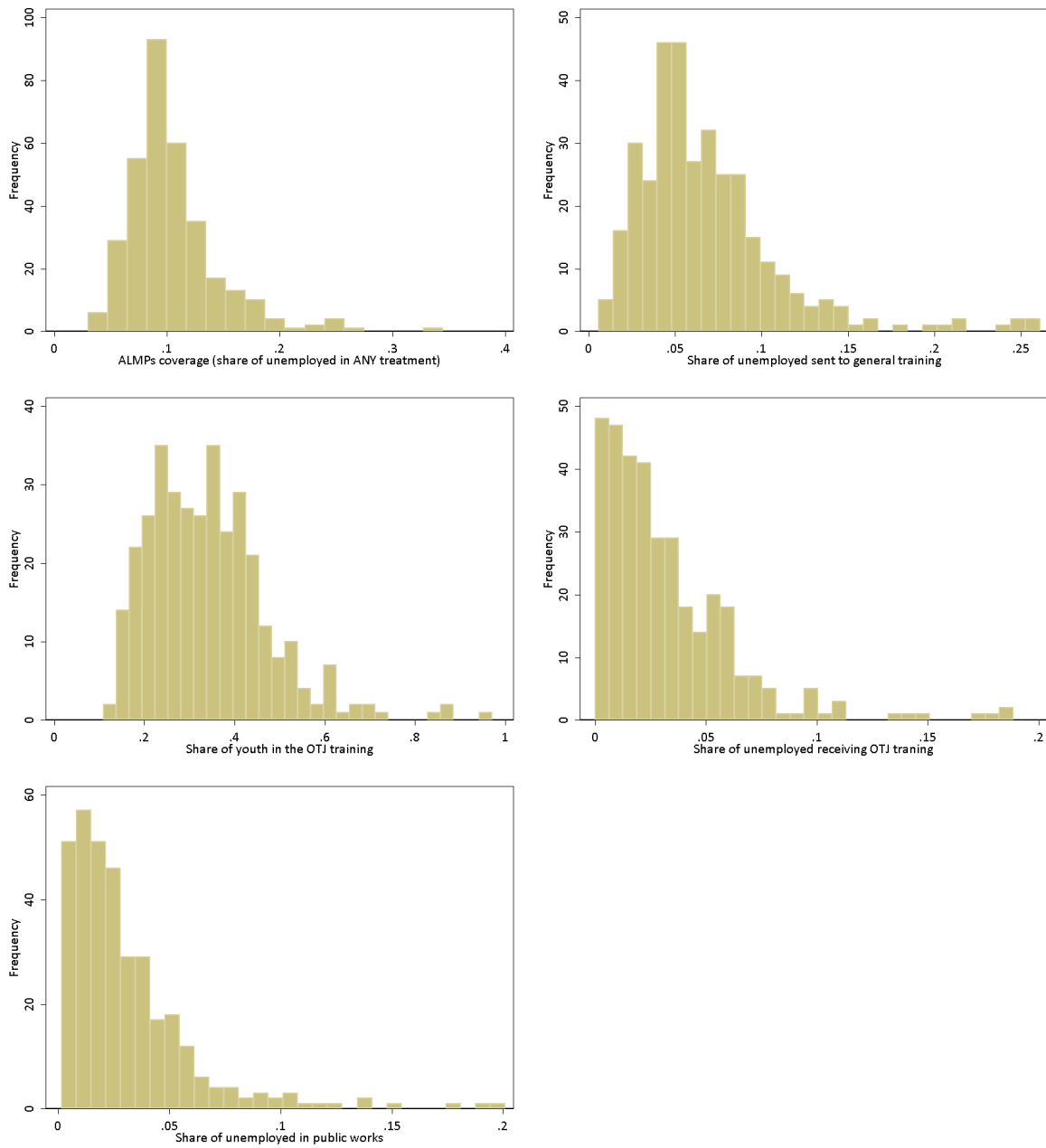


Figure 5. Distributions of ALMPs instruments usage

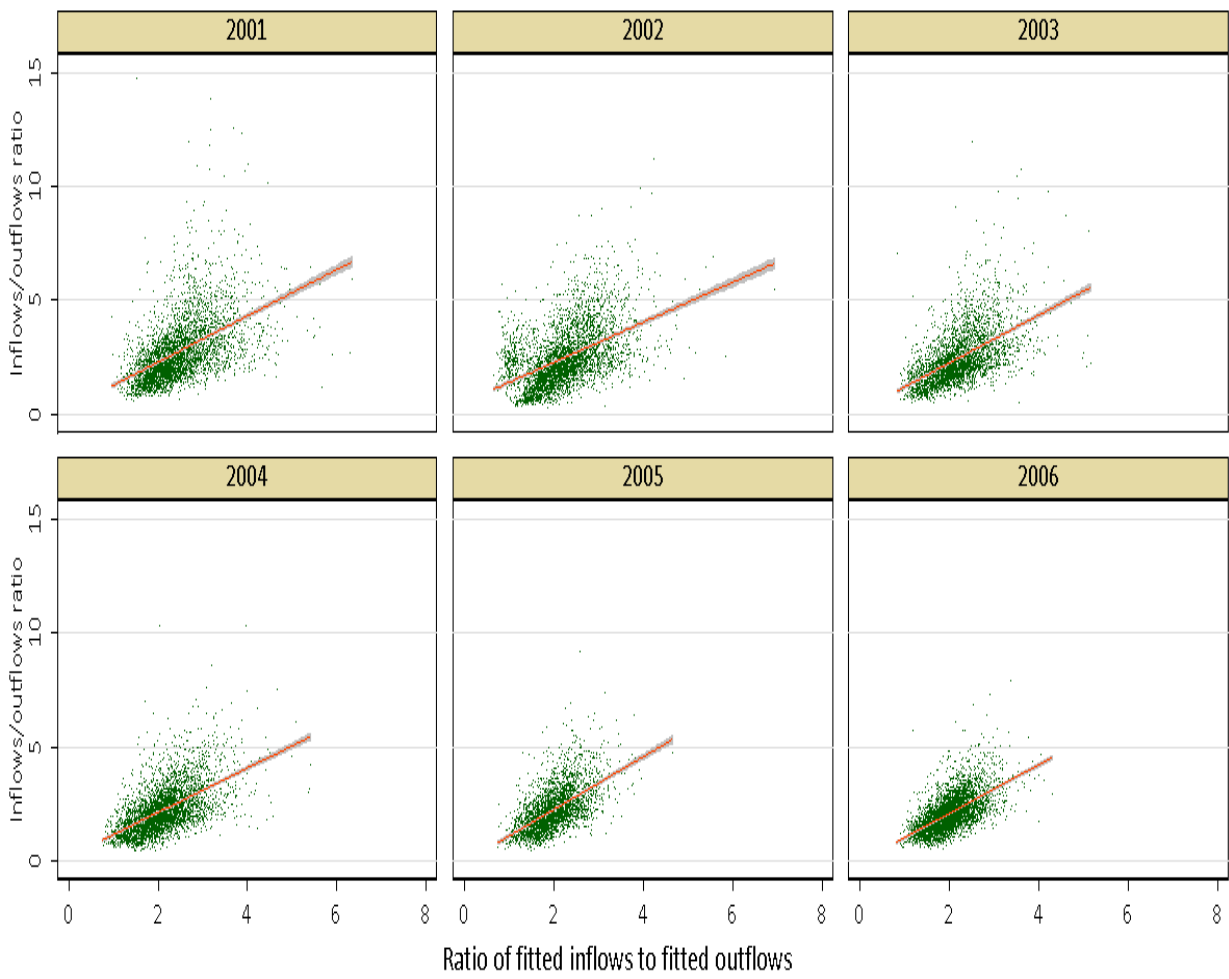


Figure 6. Actual versus fitted inflows/outflows ratios