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Productivity and Inequality Effects of Rapid Labor Reallocation – Insights from a Meta-Analysis of Studies on Transition

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Abstract

From a theoretical perspective the link between the speed and scope of rapid labor reallocation and productivity growth or inequalities remains unclear. Do reallocations with more flows tend to produce higher productivity growth? Does such link appear at the expense of higher inequalities? We explore the rich evidence from earlier studies on worker flows in the period of massive and rapid labor reallocation, i.e. the economic transition from a centrally planned to a market-oriented economy in Central and Eastern Europe. We apply the tools typical for a meta-analysis to verify the empirical regularities between labor flows and productivity growth as well as inequalities. We collected over 450 estimates of job flows from the literature and use these inputs to estimate the short-run and long-run relationship between job flows, labor productivity and inequalities. Our findings suggest relatively weak and short term links with productivity for job destruction/separations. On the other hand, data reveal a strong pattern for inequalities more churning during reallocation is associated with a permanent level efect towards increased Gini indexes.

Keywords:
transition, job creation, job destruction, worker flows, unemployment

JEL:
D21, D24, D92, G21

Acknowledgements

Authors would like to thank Karsten Staehr, Jan Rutkowski and Tomasz Mickiewicz for their insightful suggestions. The paper benefited greatly from the comments of the participants of EACES (2014), EEA (2015) conferences as well as GRAPE seminars. In the process of collecting the data for this meta-analysis we relied extensively on wonderful help from Stanislaw Cichocki, Joanna Siwinska, Karolina Goraus and Wojciech Hardy.
The support of National Center for Science (grant UMO-2012/05/E/HS4/01506) is gratefully acknowledged. Usual disclaimer applies.

1 Introduction

Both positive and adverse economic shocks imply often the need for the economy to change the allocation of capital and labor between sectors or industries, cfr. Blanchard et al. (2014). Large structural shifts were forseen already at early stage of the recent Great Recession in the US – Elsby et al. (2010), Herkenhoff and Ohanian (2011) – as well as for many European economies, e.g. Burda et al. (2011), Van Dalen and Henkens (2013), Anghel et al. (2014), Hogrefe and Sachs (2014). Indeed, there is a considerable role that sectoral reallocation can play in reinforcing the recessionary pressure or the recovery, as argued by Aaronson et al. (2004), Herkenhoff and Ohanian (2011) and Amable and Mayhew (2011) to name just a few and there is also a lot of relatively massive reallocation going on in advanced as well as emerging economies, see Hogrefe and Sachs (2014). Should these reallocations happen with *laissez-faire* churning – or are there productivity and welfare losses to excessively numerous flows in the course of transition?

To address this question we propose to build on the insights from the economic transition from a centrally planned to a market economy in Central and Eastern Europe. As of early 1990s, the literature has spurred with the analyses of the massive and rapid labor force reallocation experienced by these countries. The studies were partially motivated by a fairly unprecedented scale of adjustments – both in terms of speed and in terms of scope – but also by an equally scientific and policy debate between the so-called gradualism and shock therapy.[1] While much of the discussion concerned the 'best' policy design for a country in economic transition, there was also a positive strand focused on measuring the efficiency of the transition in terms of growth and welfare. The theoretical underpinnings to this debate were provided by Aghion and Blanchard (1994) which operationalized the concept of the optimal speed of transition. With further refinements, these models try to capture the process of collapse in the inefficient (or less efficient and downsizing) sector and emergence of the new one, with workers forced to relocate from jobs and firms destroyed to the new emerging firms.[2]

After nearly three decades of transition, the evidence is mixed. Among countries with a fast track of reforms is both Poland and the Baltic states. Whereas the former is characterized by a relatively robust growth of productivity and fairly stable inequalities, the latter have suffered two large crises in the course of transition, with volatile indicators of inequalities. Among the slow reformers can be found both Romania and Bulgaria as well as Ukraine. The former two joined the European Union, whereas economic (and political conditions) situation in Ukraine remains highly unstable. Finally, Belarus has not underwent any of the reforms that would constitute "economic transition". Yet, in terms of accumulated productivity growth since 1990 it ranks second (after Poland and before the Baltic states). With such diversified outcomes, country level studies can at best discuss the consequences of particular policy choices, but cannot provide a general overview of the link between the speed of worker reallocation and economic performance. Given this methodological constraint, a number of papers has attempted to analyze this issue using alternative approach. For example, Aristei and Perugini (2012) provide an overview of inequality patterns for 22 transition economies in Central and Eastern Europe over 1989-2008.

[1] Admittedly, both the proponents of big bang and the acolytes of gradualism have identified that the opposition between the shock therapy and gradualism is an oversimplification. We invoke these two concepts as separate in the interest of brevity in the reminder of this paper.

[2] Naturally, there is also a second strand of the theoretical literature, which originates from the political economy and analyzes if and when shock therapy can gain public support, see Marangos (2002) for an overview and Rovelli and Zaiceva (2013), Murtin and Wacziarg (2014) for recent contributions.

In a similar spirit, Peev and Mueller (2012) try to provide evidence for a link between economic growth and institutional design in these countries. In addition, many of these effects are likely to involve endogeneity – see for example Krueger and Ciolko (1998), Fidrmuc (2003), Amin and Djankov (2014).

Even bigger problem may stem from the measurement issues: how to adequately capture the policy variable concerning worker reallocation? Godoy and Stiglitz (2006) refer to a measure used widely in the literature, namely the level and the speed of privatization. Yet, the government ability to privatize at a certain moment depends crucially on the contemporaneous economic performance, making the two interspersed as well as dependent upon initial conditions on the onset of transition, see BenYishay and Grosjean (2014). When accounted for this effect, the effects of privatization become negligible. Moreover, privatization may mean both job flows (with new private owner preserving employment level in former state-owned enterprise) and worker flows (with new private owner reducing jobs or not in the former state-owned enterprise). It may also overlook significant flows (e.g. a state-owned enterprise going bankrupt before it is privatized with workers being forced to seek employment elsewhere). Consequently, analyses using privatization as a measure cannot satisfactorily capture the transmission channel of workers reallocation, which is of key policy interest.

An attractive alternative to speed and level of privatization would consist of using the indicators of workers flows. However, most of the transition countries did not have data sources enabling the analyses of gross worker flows. Comparable cross-country employment statistics – the labor force surveys with a fairly standardized methodology – for net worker flows are available for most of the transition economies as of 1995 at the earliest. Moreover, indicators of the net worker flows computed on LFS data – typically a change over a period of time in the level of employment by sector and/or ownership – are contaminated by job-to-job flows within sector and ownership flows as well as flows from and into non-employment. Finally, it would be necessary to compare worker flows with job creation and job destruction. These indicators too can be measured in gross and net terms, i.e. it is possible that an enterprise/sector experienced no negligible flows and substantial gross flows at the same time.

These data requirements on the one hand and availability constraints on the other resulted in some distinctive features of the literature in the field. First, most of the studies concern one or at the most few countries. Second, they rely on dedicated data sets, which limits substantially the number of years for which most of the analyses could be performed. Third, because different authors used data from different sources on the same country in a similar period, they are rarely directly comparable. Finally, the way they addressed the research question often differed methodologically in terms of measures (job flows vs. worker flows, net measures vs. gross indicators, model specification, etc.). Thus, although the accomplishments of the field are spectacular, synthesizing the results remains a challenge.

Our objective is to contribute to this literature using the tools from a meta-analysis. Employing the results from a wide variety of studies – i.e. for many countries and from different periods – we attempt answer the question if larger scope of worker reallocation is associated with higher rate of productivity growth and higher level of economic inequalities.[3] While the academic and policy relevance of this question is obvious, providing this answer has not been feasible. Meta-analysis is a tool that allows to overcome these constraints imposed by the data availability. We

[3]Throughout the paper, we rely on indicators of inequalities after taxes and transfers, thus taking into account also the potential impact of social safety nets.

also test the validity of these results using *Life in Transition Survey* (LiTS), which is by far the largest and most comprehensive data set on worker flows in economic transition.

Given this diversity, the evidence from the economic transition in Central and Eastern Europe is reliable for at least two reasons. First, it provided a large *quasi*-experiment, with a set of countries pursuing differentiated policies at differentiated. The evidence gathered in these case and cross-sectional studies can constitute guidance for all countries attempting an economic transition in the future.[4] Second, given the time elapsed from the beginning of the transitition, the long-term effects can already be observed.

We find that the link between the job flows and productivity is weak, mostly contemporaneous and occurs mostly via job creations/hirings. On the other hand, the link with the inequalities seems to be stronger, more robust and with long-run consequences. In the short run, more job flows tend to be associated with higher inequalities. In the long run, the effects come mostly from job destructions / separations. These results suggest that indeed the lack of synchronization between destructions and creations contributes to less equal economic outcomes while social safety nets implemented in these countries were insufficient to stop the increasing dispersion in net incomes. While we do not take any stand in the debate between the gradualists and the reformers, we demonstrate that overall, the links postulated by the theory are either relatively weak in the data. In addition, they seem to have been mitigated by a number of factors unaccounted for in the literature. One of such important factors may be the scale and scope of job destructions / separations in the emerging private sector.

The paper is structured as follows. In the next section, we discuss the theoretical link between the speed of labor reallocation during the transition and the productivity dynamics. In Section 3 we carefully describe the procedure of collecting the data for this meta-analysis. Section 4 provides an overview of the findings in the literature, elaborating on the cross-country differentiation as well as time trends. Finally, in Section 5 we employ the meta-analysis tools to quantify the strength of the link between the productivity and the speed of labor reallocation. Also in this section we provide the cross-checks with the LiTS data. The concluding section summarizes the policy implications of this study.

2 Theoretical insights

It is possible to distinguish between two types of labor flows: job flows and worker flows. The first is obtained from firm level data and represents the change in the number of employees within the course of the year. The second corresponds to the movement of workers in and out of the companies.[5] In an extreme case, when all workers swap firms, job flows might be equal to zero and worker flows equal the number of workers.

The distinction between job and worker flows is not only theoretical, it is also empirical. Depending on the data at hand, researchers studied one or the other. Analyzing gross worker flows requires typically individual level data, such as that collected in the labor force surveys; while gross job flows can only be studied from firm level databases. To analyze the net flows – both for workers and jobs – it is sufficient to rely on more readily available aggregate statistics,

[4] Conceptually, the links have already been made to China (Sachs et al. 1994, Buck et al. 2001), India (Sachs 1995, Sen 1998) or Iraq (Looney 2004).

[5] In the reminder of this paper, we refer to job flows in terms of job creation and destructions, and to worker flows in terms of hirings and separations.

such as overall change in sectoral employment or firm-level overall change in employment, e.e. year on year. Given the well documented lack of reliable information at the level of individuals or detailed employment statistics for firms, a large part of the research focused on net worker flows and net job flows, which need not correspond to gross worker flows.

A highly influential model of Aghion and Blanchard (1994) provides an intuitive – even if stylized – mechanism to relate labor reallocation and productivity. An economy has two sectors: incumbent inefficient public sector and private newcomers with exogenous efficiency advantage of the former over the latter. With benevolent government interested in maximizing output, privatization and making room for the private sector is the only strategy, but the focus of the model lies in the speed at which it is optimal to pursue privatization. By destroying jobs state releases the workers to alternative uses by the private sector. Shrinking the size of the state has two opposing effects. First, unemployment generates a downward wage pressure, facilitating job creation in the private sector. Second, with a growing pool of the unemployed, a need for social nets emerges, whereas these can only be funded by taxing labor, thus diminishing job creation. Depending on the synchronization between downward pressure on wage expectations of the job seekers and upward pressure on non-wage employment costs, an economy can pursue transition on a balanced path of fairly low unemployment or enter an unstable equilibrium with unemployment fluctuating to relatively high levels.

Aghion and Blanchard (1994) framework [6] provides tentative insights on the possible link between worker reallocation and economic efficiency. On the one hand, excessive reallocation should imply unstable equilibria with high unemployment, thus lowering social cohesion and increasing inequality - both in terms of level and in relative terms to the pre-transition levels. On the other hand, higher unemployment may be consistent with the selection into employment of only the more productive individuals as well as faster adjustment from misallocation to optimal allocation of both capital and labor. Consequently, higher speed of worker reallocation would be associated with higher productivity growth.

Indeed, Aghion and Blanchard (1994) and extensions, consider only the case of transition in which jobs are actually destroyed in the public sectors and workers are forced to seek employment in the private sector, mediated or not by an unemployment spell. On the other hand, an scenario of a massive privatization-where all workers remain in their positions but the ownership of the firm changes- it is characterized by high values of job creation and destruction, without major worker flows. However, fast job destruction could imply that – due to imperfect information and lengthy churning – many productive workers take longer to secure a lasting adequate match after a change in the economy structure. Thus, higher speed of transition could also be associated with a lower productivity growth, since the lengthiness of this process represents an efficiency loss, i.e. lowers the relation between the actual and the potential productivity level and growth.

Moreover, actually job destruction in the public sector as well as the job creation in a private sector can occur in three different forms: privatization, shut-down or a combination of the two. With pure privatization, workers stay in the firm, but the ownership structure changes to private hands. In such cases, job destruction and creation occur with no worker flows. However, if a

[6] Subsequent extensions encompass particular aspects of the reallocation process. Boeri (2000) develops a framework where workers differ on their skill sets and where the institutional setting plays some role. Tichit (2006) increases the number of flows to consider as well movements towards inactivity, while Papapanagos and Sanfey (2003) introduced the possibility of migration as an alternative to unemployment. Heterogeneity among workers was introduced by Balla et al. (2008). Finally, Bruno (2006) developed a model where workers in the private sector might also move to unemployment.

public company exits the market and new private sector emerges – as posited by optimal speed of transition theories – workers flow between jobs in different companies, possibly with a spell of unemployment between the two employments. The combination of privatization and redundancies comes from the new private owner reducing employment, thus causing job destructions and forcing worker flows in both gross and net terms. While clearly transition economies experienced some of all three – admittedly at different proportions – their effects for productivity and inequalities are bound to differ. Pure privatization should imply a positive link to productivity with no paramount effect on inequalities, at least in the short run (i.e. until new wage structure emerges). Shut-down and a combination involve substantial worker flows, thus necessitating the channels such as de-synchronization and unstable equilibria, misallocation as well as possibly lengthy churning.

Summarizing, the optimal speed of transition theory provides some grounds to expect a positive link between job destruction or excess job destruction and inequalities, but the models have little predictive power for job creation as well as net/gross worker flows. In terms of link to productivity, both types of links are possible, but admittedly it should be clearer for job destruction and creation than for hirings and separations. Moreover, these effects can be lasting – such as efficiency loss due to lengthy churning or misallocation – but need not be.

It is the objective of this paper to put these contention into empirical test. We collect the estimates on job and worker flows from the literature and complement it with worker flows data obtained from Living in Transition Survey by the European Bank for Reconstruction and Development. We test explicitly the contemporaneous and long-term links between labor market flows and labor productivity as well as inequalities.

3 Literature sampling

The list of articles for this meta-analysis was obtained from EconLit.[7] The initial sample included all published articles and book chapters reported after querying for the following key words: "reallocation" and "transition". Only English-written research papers were considered in this study. while The query returned 131 research papers in total, of which 16 had only an English-written abstract and were immediately discarded from further analysis. Each of the remaining 116 papers was downloaded and reviewed. However, many of the papers were false positives, as reallocation refers not only to labor flows, but also to financial flows and land property changes. Thus, 65 papers were dropped from further analysis as they were clearly unrelated to our study.

An inspection of the remaining papers confirms that the literature in the field is highly diversified in terms of variables and indicators used, models formulated and statistics reported. Given the research question of our study, we focused on identifying papers, which contain conceptually comparable estimates of job flows. Thus, this meta-analysis includes all studies which report estimates of job flows: whether the traditional measures of job creation and destruction or their individual-level counterparts, i.e. hirings and firings.

To reassure that no relevant papers were ignored, we included a second stage of search. In the second stage, we explored the bibliography section of all the articles deemed relevant in the first stage of the search. This additional search increased the number of papers by 5 related

[7] See Stanley and Jarrell (2005) on the comparison of validity between EconLit and GoogleScholar as well as other sources.

papers. With these criteria we compiled a data set with 53 published articles.

Yet, not all the 53 studies could be used in our study. First, we restricted the sample to those articles analyzing transition economies. Thus, articles such as Albæk and Hansen (2004), which works with Danish data, or papers studying the US economy, such as Davis and Haltiwanger (1992), Golan et al. (2007) or Walker (2013). We also decided to exclude articles on China. While the country underwent significant changes in the last two decades, the transition process is not comparable to that of countries from Central and Eastern Europe or the former Soviet Union. The reallocation in China is closely related to the urban/rural migrations and changes in the agricultural sector, which are not captured by the OST models, see Dong and Xu (2009).

Among articles written on transition economies, we employed a second criteria: the availability of suitable information for the analysis. Therefore, we excluded papers which were purely theoretical (for obvious reasons) as well as papers that do not report size of flows (even if they comprise figures). This is the case of Jurajda and Terrell (2003), who included a graphical analysis of flows in Czech Republic and Estonia, but did not present any tables to reveal the precise numbers. Finally, a few papers could not be included due to incomplete information.

Turunen (2004), for example, included a transition matrix, but not the number of individuals initially in each state, which makes it impossible to recover the size of the flows. Similarly, Schaffner (2011) provided an interesting comparison between East and West Germany reallocation patterns. However, her analysis aggregates gross flows over time, which makes it incomparable to other studies. Earle (2012) had both shortcomings. The data matrix presented does not allow to recover the size of the flows and the flows are calculated over two years, thus lacking comparability. Table 1 summarizes the search process and the number of papers excluded by reason of dismissal.

Table 1: The process of compiling the list of analyzed articles

EcoLit search: 131 articles, of which dropped due to:	
reason	# of articles
not in English	16
unrelated topic	67
purely theoretical	10
no or insufficient data on flows	11
not transition countries	5
other reasons (see text)	9
Bibliography search in the 13 remaining articles: 5 articles	
in total coded	18

The final list of articles considered is reported in Table 2. In total, we have information on job flows for only ten of the almost thirty transition countries. Moreover, most papers focused on just one country, which increases the need for a paper comparing different economies. The lack of adequate/comparable data might be the main cause of this shortage. Table 2 also allows a time interpretation. On the one hand, almost half of the papers were published between 2002 and 2003, which indicates the relevance of the topic in the runup to the EU enlargement. On the other, if we consider the years under analysis, all papers but two focus on the first decade of transition, ignoring more recent developments.

Mitra et al. (2014) as well as Tyrowicz and van der Velde (2014) are exceptions on both

accounts, as they employed international databases on firms and workers, respectively. These articles also worked with more recent data. However and, even though, both papers *employ* measures of job creation and destruction in their analysis, the figures are not reported and hence they were excluded from further analysis.

Table 2: List of articles included in the meta-analysis

Reference	Period	Country	Type of search	# of estimates
Konings et al. (1996)	1987-1991	Poland	Bibliography	23
Bojnec and Konings (1998)	1990-1995	Slovenia	EconLit	11
Bilsen and Konings (1998)	1990-1994	Bulgaria, Hungary Romania	Bibliography	27
Sorm and Terrell (2000)	1994-1999	Czech Republic	Bibliography	5
Acquisti and Lehmann (2000)	1996-1997	Russia	Bibliography	26
Haltiwanger and Vodopivec (2002)	1989-1995	Estonia	EconLit	108
Brown and Earle (2002)	1985-1998	Russia	Bibliography	38
Brown and Earle (2003)	1990-2000	Russia	EconLit	40
Faggio and Konings (2003)	1994-1998	Bulgaria, Estonia, Slovenia, Poland, Romania	EconLit	57
Konings et al. (2003)	1995-2000	Ukraine	EconLit	18
Walsh (2003)	1994-1996	Poland	EconLit	36
Warzynski (2003)	1996-1999	Poland	EconLit	4
Masso and Heshmati (2004)	1992-2001	Estonia	EconLit	10
Brown and Earle (2006)	1992-2000	Ukraine	EconLit	8
Christev et al. (2008)	1993-2000	Ukraine	EconLit	7
De Loecker and Konings (2006)	1993-2000	Slovenia	EconLit	23
Siebertova and Senaj (2007)	2000-2004	Slovak	EconLit	12
Gimpelson et al. (2010)	2004	Russia	EconLit	1

These studies present many features in common. First, they use only yearly data, which might bias the size of the flows as it oversees the possibility that individuals may have unemployment spells shorter than a year, as well as seasonal demand for employment. Another important limitation concerns the level of aggregation. In all of them, firms, and not plants, constitute the level of analysis, which hides the variation inside each firm. Finally, most studies focused on one country, which highlights the value of international comparisons. The sole exceptions correspond to Faggio and Konings (2003), where the authors compare flows for five different economies and Bilsen and Konings (1998), which studies the behaviour of firms in Bulgaria, Hungary and Romania.[8]

The articles varied not only in their geographic coverage but also with reference to the data that they employ. Roughly two thirds of the papers employ firm-level data, while the remaining use worker-level data, thus observing only hirings and separations. The source of data also varies across papers: while all articles at worker level use national labour force surveys in their analysis, the picture on firm level data is less homogeneous. Articles from this group employed mostly data gathered by national administrative bodies, followed by Amadeus and surveys designed and conducted by the researchers.

[8] Notice that also Jurajda and Terrell (2003) have a multi-country analysis (Estonia and the Czech Republic).

The publications differ also on another account: substantial dispersion in the number of estimates presented. For example, Gimpelson et al. (2010) on the one extreme presents only 1 estimate while Haltiwanger and Vodopivec (2002) includes over 100. Part of this dispersion mirrors the number of countries included in the article and the number of "cuts" with reference to the data. In fact, the average number of estimates per article is 29. In Table 2, we present the exact number of estimates taken from each paper.

The number of estimates not only varies across articles, but also across countries and years. In Table 3, we present the number of estimates for each country year pair. Clearly, Estonia and Russia attracted more the attention of the researchers, followed not so closely by Poland and Ukraine.[9] We also observe that most of the estimates come form the early transition, half of them are from the 1992 to 1996 period.

Table 3: Estimates for each country and year

Year	Bulgaria	Czech Republic	Estonia	Hungary	Poland	Romania	Russia	Slovakia	Slovenia	Ukraine	Total
1985							9				9
1986							1				1
1987					1		1				2
1988					1		1				2
1989			18		1		1				20
1990	1		18	1	20	1	5		1		47
1991	1		18	1		1	6		6		33
1992	1		19	1		1	18		1	1	42
1993	6		19	6		6	2		1	2	42
1994	11	1	23		47		6		14	2	104
1995	1	1	3		1	11	6		5	2	31
1996	1	1	2		2	1	32		4	3	46
1997	1	1	2		2	1	6		4	3	20
1998		1	1		1		6		3	10	22
1999			1		1		4		2	10	18
2000			1					9	1		11
2001			1					1			2
2002								1			1
2003								1			1
2004							1				1
Total	23	5	126	9	77	22	105	12	42	33	454

Note: The number of estimates from each country and year may come from more than one paper.

Different data sources placed constraints on the types of flows that researchers could observe.

[9] In the case of Poland, it is worth noticing that the 47 observations in 1994 correspond to two papers, one of which – Walsh (2003) – studies flows for two consecutive years within six strata of regional labor markets (stratification is based on infrastructural development).

Analyses based on Amadeus capture only net flows from and to large companies, as the threshold for participating in the survey excludes small companies.[10] Indeed, an analysis based on firm size presents another problem. Even though several articles distinguished the dynamics of firms according to the number of employees (small, medium, large, very large), the categories overlap only partially. For example, while in Bojnec and Konings (1998) smaller firms are those employing less than 20 employees, in Siebertova and Senaj (2007), the threshold is less than 50 employees and in Acquisti and Lehmann (2000), less than 5 employees.

A similar problems arises when sectoral composition is considered. Many country statistical offices surveyed only firms in the manufacturing sector, which may be regarded as the heritage from the Soviet era. Thus, even when all papers include the manufacturing sector in their estimations of job creation and destruction, only half of them include a similar measure for changes in the service sector, in spite of being the emerging sector. Finally, articles also differed on the treatment to different types of ownership. While 16 papers include at least one estimation for the total economy, the analysis of specific sectors is less popular. Only nine papers provided separate analyses for the public and the private sector. Other forms of ownership, collective or foreign, received even less attention and were not counted as an individual category in most articles.

Summarizing, we dispose of 454 estimates[11] of flows from 18 available articles [12], covering the span between 1985 and 2003 in 10 transition economies. While majority of the available estimates cover the period of early transition, there is a fair share of estimates for subsequent years as well. In the subsequent sections we move to an exploratory meta-analysis and a formal meta-regression to test our intuitions on the link between speed of reallocation and productivity growth as well as inequalities.

4 Exploratory Meta-Analysis

This section provides an overview of the range of values for labor market flows provided in the literature. While we discuss extensively the role of methods employed in section 5, we first explore the dispersion of these estimates and insights that can be drawn from this dispersion. We also provide a comparison between the results presented in the analyzed papers and the insights from alternative data sources. In order to compare only the comparable, we need to drop Czech Republic, because for this country the estimates are available only for hirings and firings instead of job creations and job destructions.

4.1 General tendencies in the literature

The country averages for both types of flows differ substantially. Estimates of job creation are the highest for Estonia and Romania, and the lowest for Hungary and Ukraine, followed closely by Poland and Bulgaria. With reference to job destruction, Poland, followed by Slovakia and

[10] Depending on the country and year, the Amadeus sample might be restricted by employment or by revenue thresholds.

[11] Unfortunately, most of our specifications use at most 430 observations, as we restrict the sample period to the first decade of reallocation (before 2001) and additional 18 estimates were only available as gross flows (JC+JD) from which we could not recover the original values. Through these correction we loose 18 estimates for Poland in 1994 and all observations from Slovakia

[12] Only Acquisti and Lehmann (2000) was not published so far.

Russia were the countries with the highest estimates. A simple Anova test confirms that the estimates are all statistically different. From table 4 we can also infer that countries differed in terms of gross, net and excess reallocation [13]. With the exception of Romania and Estonia, the remaining countries in the sample experienced negative net reallocation, which is consistent with the increase in unemployment and inactivity during the period. The largest difference corresponds to Poland, in part due to the period under analysis. country

Table 4: Average job and worker flows

	Job Flows				Worker flows			
Country	Job creation		Job destruction		Hirings		Separations	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Bulgaria	4.62	9.54	6.90	3.54				
Czech Republic					4.30	0.29	3.72	0.44
Estonia	12.95	22.76	8.87	5.10	26.95	26.43	22.70	10.27
Hungary	3.20	5.44	7.61	1.43				
Poland	4.38	3.44	14.35	9.48	17.29	3.29	17.94	3.57
Romania	11.28	24.37	7.80	3.57				
Russia	9.15	18.25	10.97	6.34	20.70	3.25	28.07	1.75
Slovenia	7.33	2.62	12.67	3.90				
Slovakia	5.28	4.15	7.12	5.92				
Ukraine	3.73	4.00	9.64	1.65				
Overall	7.99	15.92	9.86	6.18	22.98	21.95	21.08	9.79
ANOVA test for	F-stat.	p-value	F-stat.	p-value	F-stat.	p-value	F-stat.	p-value
equality in means	2.02	0.04	6.53	0.00	2.33	0.08	10.27	0.00

Notes: Mean and standard deviations values of job creation and job destruction for each country, with bootstrap with 1000 repetitions.

In Table A.1 in the Appendix we present the average values of job creation and destruction for the country year pairs studied in the literature. When it comes to job creation, all countries but Estonia appear to have the same pattern: first, they experienced a small increase in the early 1990s to converge to 5% job creation rate. This figure is much smaller than the 10% portrayed in the literature for mature economies in a comparable period, see Davis and Haltiwanger (1992) for the US. Estonia also converged to the 5% creation rate, but from above.

The estimates from job destruction also present two patterns. First, Estonia, Bulgaria and, to some extent, Hungary and Poland experienced a surge in job destruction at the beginning of the period, and then they gradually decrease to a figure between 5% and 7%. This pattern is consistent with the shock therapy implemented in those countries. In the Polish case, we observe a new increase in job destruction by the end of the 20th century. For Russia and Ukraine job destruction rate increased gradually, whereas in the case of Slovenia it was fairly stable throughout the entire analyzed period.

A comparison of the size of flows reveals that in almost all cases job destruction was larger than job creation, as was expected given the increase in unemployment that the countries experienced in the period. Once again, Estonia appears to behave differently, as job creation exceeded destruction for almost the entire period. Only in the late 1990s, the destruction surpassed

[13] Gross, net and excess are three additional measures of reallocation. Gross is the sum of job creation and destruction; net ,as it name suggests, is the difference between creation and destruction, while excess is the part of reallocation above what was needed. It is defined as gross flows minus the absolute value of net flows.

creation, and yet it was by a margin smaller than other countries in the same periods.

The image from Table A.1 is partly blurred by the fact that some of the papers included many estimates for a single year. As mentioned in section 3, several papers analyzed the behaviour of different subsamples of the firm population, such as firms from the private sector, from manufacturing, etc. According to the OST theory, private firms are expected to have higher job creation than public firms. With the growing service sector, one could also expect more job destruction in the manufacturing and higher job creation rates in service sector. These contentions may be tested formally, see Table 5.

Table 5: Flow characteristics

	Job creation			Job destruction		
	No	Yes	$t-statistic$	No	Yes	$t-statistic$
Types of flows studied						
Worker level	8.73	24.51	-6.00	10.27	21.96	-11.61
Characteristics of the sample						
Only public firms	9.95	2.04	2.68	10.32	9.98	0.36
Only firms in manufacture	13.22	3.09	4.86	10.04	10.56	-0.68
Only small firms	6.18	24.02	-6.17	9.30	16.10	-6.76
Only large firms	9.63	4.28	1.87	10.44	9.40	1.03

Notes: Two-sided $t-tests$, bootstrapped with 1000 repetitions. The upper panel compares estimates of job creation and job destruction obtained from firm and worker level. The lower panel explores how the estimates varied depending on the subsample of firms under study.

In the first row we compare estimates from the firm level data to those from a worker level, or job creation and destruction to separations and hirings. The results indicate that the differences tend to be high, especially in the case of the comparison between the job destructions and separations. However, these results were expected as gross flows are usually larger than net flows. Of course, part of the difference might be a by-product of other characteristics of the estimates. In fact, none of the papers in the sample worked with both firm and individual level data, which means that these comparisons should be interpreted with caution.[14] Given the apparent difference in sizes, on the remaining tests of Table 5 we take into account only estimates obtained from firm level data.

The remaining rows compare the results of the whole sample with those of specific subgroups (e.g. the grouping variables takes values of one when the estimates come from the public sector alone, and zero in all other cases for the second row)[15]. First, form the tests on the public sector, it appears that the narrative of Aghion and Blanchard (1994) is only partially confirmed. The public sector was much less active in terms of job creation, but it was not just shrinking. Some new positions were created as well in the period. On the other hand, it seems like the public sector did not differ much in terms of job destruction from the rest of the economy. Job creation in manufacture appears to be lower than in service sector or the overall economy; but the pace of job destruction is remarkably similar. The results are consistent with the idea of an economy

[14] Haltiwanger and Vodopivec (2002) analysed Estonia and provided estimates of both job creationdestruction and separations and hirings, but they do so employing only LFS data. Thus, job creation is a modified calculation of hirings (for example clustering at the industry and region level), which bears little resemblance to the estimates from firm level data.

[15] When the authors presented results for the overall economy (public sector included, but not differentiated), it is also coded as zero

in transition where the emerging sector is still fragile.

Second, we study the effect of size of the firms on the estimates.[16] The intuition behind this approach comes from the fact that smaller firms are more dynamic than larger ones as they accommodate to shocks by adjusting labour demand. Additionally, it is possible to have some selection bias, as small firms are more likely to be private. The results presented in table 5 confirm this hypothesis, as estimates including only small firms are larger, both on job creation and destruction. On the other hand, estimates from only large firms behave in a similar way to the overall economy.

4.2 A meta-regression

Although the reallocation literature does not present estimates in the conventional understanding of this term – and thus there is little value in inquiring publication bias or other similar phenomena – there are some important insights from a meta-regression on the characteristics of the estimates. Namely, putting in direct horse race the properties described in earlier sections. We do that in Table 6. We discuss separately the estimates for job creation in columns (1) to (3) and job destruction in columns (4) to (6). Among the three specifications for each of the job flows measures, we introduce step by step controls for article, country and year. Introducing these controls is meant to serve as a test on the robustness of the estimated relationships between estimate properties and its variation.

The results from the regression are along the lines of our expectations from the descriptive statistics. Worker flows are larger than job flows, both in terms of creation and destruction. Additionally, firms exhibit a similar behaviour in terms of job destruction, regardless of sector or ownership type. Although the estimates of the standard errors increase with the inclusion of article, year and country controls, the results stay largely significant, while the point estimators actually slightly grow.

The results also demonstrate some economic insights. Namely, when it comes to creation, public, manufacture and large firms seem to be characterized by lower estimates of the flows. Theories of transition, such as Aghion and Blanchard (1994), were right in pointing towards the slower job creation in the 'old' sector, but might have missed the point when portraying the emerging sector as stable. In fact, both job creation and job destruction estimates are larger when samples were restricted to small firms.

The increase in the R^2 subsequent to the inclusion of study fixed effects comes from the fact that most papers considered only one country at a time, and hence it might hide country level effects. In order to control for that, we included column 3 and 6, where we add country and time controls. Estimates changed only slightly for the flow characteristics and remained significant in the case of paper effects. Thus, we conclude that paper effects are relevant and we proceed to use them in the calculation of the residuals for the next step.

The estimates from Table 6 are suggestive of one more insight: to provide a reliable analysis of the dispersion of job flows one needs to control for the characteristics of the data set. To this end, in the subsequent analyses we will use two types of indicators. First, we have the raw

[16] As mentioned in the previous section, articles did not provide a consistent criterion to distinguish between large and small firms, rather the authors employ different, not always overlapping, cut-off values. Within this study we define as small firms those with less than 50 employees. In cases when authors used categories such as less than 100 employees, they were considered as containing small and large firms.

Table 6: Meta-regression of studies properties and provided estimates of labor market flows

Variable	Job creation			Job destruction		
	Studies reporting job flows					
Only public firms	-3.343***	-6.243***	-6.676***	-0.243	-0.726	-0.663
	(0.867)	(1.880)	(2.086)	(0.908)	(0.976)	(0.750)
Only in manufacturing	-7.602***	-7.632***	-8.051***	2.403***	-0.574	-0.853
	(2.156)	(2.307)	(2.507)	(0.782)	(0.723)	(0.652)
Only large firms	-4.095***	-3.856**	-3.871**	0.298	-1.060	-1.291
	(1.749)	(2.134)	(2.282)	(0.725)	(1.072)	(0.985)
Only small firms	11.86***	5.016	4.761	7.832***	4.247***	3.800***
	(3.959)	(4.242)	(4.211)	(1.595)	(1.537)	(1.348)
Controls for article	No	Yes	Yes	No	Yes	Yes
Controls for country	No	No	Yes	No	No	Yes
Controls for year	No	No	Yes	No	No	Yes
# of observations	345	345	345	345	345	345
R^2	0.174	0.228	0.253	0.214	0.484	0.615
	Studies reporting worker flows					
Only public firms	-9.988**	-28.67***	-28.67***	3.920	-2.575	-2.575
	(5.634)	(9.001)	(9.840)	(2.735)	(3.773)	(2.261)
Only in manufacturing	-6.382	-25.06***	-25.06***	4.465**	-2.030	-2.030
	(5.808)	(9.226)	(10.18)	(2.674)	(3.978)	(2.382)
Only large firms	-21.63***	-31.79***	-31.79***	10.80	6.137	6.137
	(7.195)	(8.876)	(9.551)	(9.396)	(9.275)	(8.976)
Only small firms	-3.041	-13.21	-13.21	3.303	-1.362	-1.362
	(8.041)	(9.569)	(9.593)	(2.697)	(2.802)	(1.827)
Controls for article	No	Yes	Yes	No	Yes	Yes
Controls for country	No	No	Yes	No	No	Yes
Controls for year	No	No	Yes	No	No	Yes
# of observations	85	85	85	85	85	85
R^2	0.102	0.264	0.291	0.127	0.315	0.642

Notes: Bootstrapped standard errors with 1000 repetitions presented in parentheses. ***,**,* indicate significance at the 5%, 10% and 15% level respectively. The results for gross flows, net flows and excess flows available in Table A.2 in the Appendix.

estimates of job flows provided in the literature. Second, we also use the residuals from the regressions portrayed in Table 6. [17] These residuals convey the dispersion cleaned of the effects associated with the source of the data and the types of units covered.

4.3 A comparison with the alternative data sources

A nagging question in any meta-analysis corresponds to the reliability of the estimates, all the more since authors employed different sources, and in general data from this period is scarce. To overcome this problem we compare the estimates from the literature to similarly computed statistics for the Life in Transition Survey (LiTS), a comprehensive survey conducted in all former socialist countries.[18] Even though, LiTS data presents valuable features, it has one drawback: it allows to calculate hirings and separations, but not the measures of job creation and job destruction available in most literature. Therefore, in order to maximize comparability, we keep only the calculations of job creation and destruction that include all ownership types and industries in the next analysis. This restriction reduces somehow the number of available estimates. When more than one estimate per country/year is available, we take the median of them as the reference point.[19]

In Figure 1 we present a comparison of job creation (destruction) to hirings (separations). In most cases, worker level flows (gross) are larger than firm level flows (net). This holds strongly in the case of job creation, but appears to be true in job destruction as well. Given the results presented in table 5 this is not surprising. Concerning the relation between the flows, graph 1 shows that job creation and hirings have a close to linear relation. In the case of job destruction, the relation is less clear due to the presence of outliers. Estonia in 1991 is an example, as it had separations close to 16 % of the workforce (more than two standard deviations away from the mean in the sample).

In order to explore the strength of the relation we provide an additional series of tests in Table 7. We include an index of correlation, and the coefficients on the variables for 4 sets of regressions: (a) without any additional controls; (b) with country dummies; (c) with year dummies; (d) with country and year dummies. These results confirm the intuitions from the Figure 1. First, all coefficients are positive. Second, gross flows are higher than their net counterparts. Third, with loosing the degrees of freedom due to higher number of explanatory variables, only one coefficient looses significance (these estimates rely on 53 country-year data points). Thus, the comparison indicates that the estimates from the literature are remarkably similar to those obtained from the LiTS, especially in job destruction, where the coefficient is close to one. This finding holds in spite of important methodological differences in the analyzed literature.

Summarizing, the exploratory meta-analysis reveals important regularities. First, different paths of transition were typically associated with different paths in job creation and job de-

[17] To be more specific, we calculate the residuals from the second column of each flow, which allows us to preserve country and time specific effects, while at the same time we control for differences among the estimates. However, unlike Table 6 the residuals come from a regression without a constant.

[18] Turkmenistan and Kosovo are the only transition countries not included in LiTS. A detailed description of the survey procedure can be found in the EBRD (2006) while some descriptive statistics are available in Sanfey and Teksoz (2006).

[19] This situation was not frequent and our treatment unlikely to affect the results. Only in a few cases the number of estimates was above 2 and whenever more estimates were available the ratio of standard deviation to the median was smaller than 0.1. The exceptions are Estonia in both job creation and destruction and Russia in job destruction.

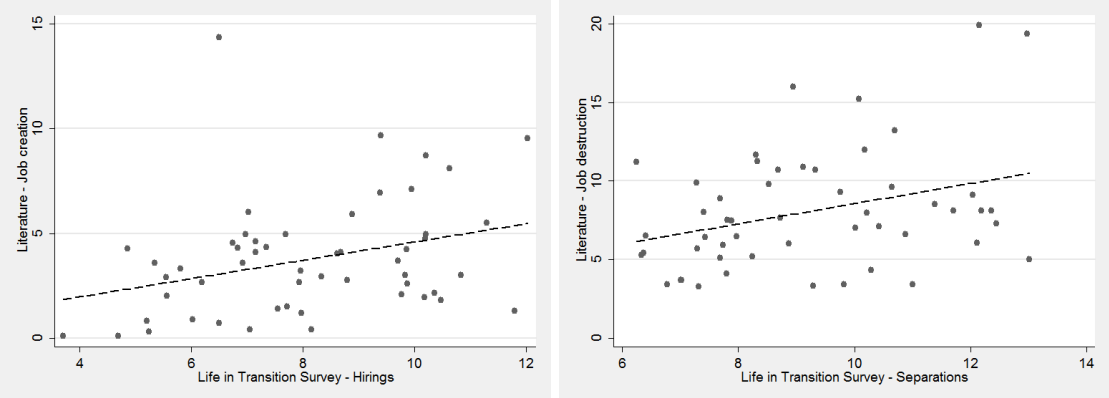


Figure 1: Correlations between the estimates from the literature analyzed in this study and the LiTS data.

Table 7: The estimates from the literature and LiTS data

	Hirings / Job creations		Separations / Job destructions	
Specification	Coefficient	Test statistic	Coefficient	Test statistic
Pairwise correlation	0.449***	3.808	0.328***	2.554
OLS - no controls	0.524***	3.359	0.641***	2.085
OLS - country dummies	0.345***	3.317	0.580*	1.440
OLS - year dummies	0.443***	2.095	0.765***	2.204
OLS - country and year dummies	0.226	1.382	1.057 *	1.867

Notes: The dependent variable is the median of job creation (destruction) in the literature for each country year and the independent variable hirings (separations) from LiTS data. Standard errors were obtained using bootstrap with 1000 repetitions. $z - ratio$ for pairwise correlations and $t - statistics$ for OLS coefficients *,**, *** denote variables significant at the 15%, 10% and 5% significance levels

struction. On the one hand, countries which followed a gradualist approach are characterized by relatively stable rates for both creation and destruction, but also excess destruction seems to be fairly large. On the other hand, some of the countries which followed the so-called "shock therapy" are characterized with fluctuating job creation and destruction rates, as well as fluctuating excess destruction. Estonia is an exception, since this country only experienced excess destruction once, at the end of 1990s. Second, insights from the literature partly confirm the predictions, i.e. public firms were characterized by lower creation than the smaller and private firms by larger creation. Yet, the predictions of the OST theory are not fully confirmed. Namely, data do not suggest that public firms have higher destruction rates than the private ones. Finally, there seems to be a gradual convergence towards the creation and destruction rates close to app. 5-7% in all transition economies analyzed in this survey, which seems to suggest that by the end of the period covered in the studies labor market in these countries became fairly similar to advanced market economies. Given these disparities in the paths and eventual convergence, in the next section we move to exploring the link between job flows and productivity as well as inequalities.

5 The links to productivity and inequalities

As with many other variables, the measurement of productivity and productivity changes in transition countries suffers from information shortages. To the best of our knowledge, the Conference Board provides the most comprehensive database on productivity in transition economies. In addition to the data on nominal and real GDP, the database includes less frequently available variables, such as total number of employees.[20] As these are aggregate data, one cannot control for the economic sector or ownership structure. For most countries, the Conference Board provides information on GDP since 1980, even for territories that by the time were formerly parts of the USSR, such as Ukraine or Russia in our sample. Conference Board data is also available separately for Czech Republic and Slovakia already as of 1985.

Given that all of the countries analyzed in the literature differed in productivity already at the beginning of transition, we constructed a chain index of per worker productivity, which takes the countries' average productivity during the 1980's as a reference level, see left panel of Figure 2. The patterns were described at length in the earlier studies, including an important dip at the beginning of the period followed by a recovery, which was faster in Baltic and Central European Countries than in other former Soviet Union countries. Notably, most of those countries had still in 2000 (and some even in 2010) productivity levels below the 1980's average.

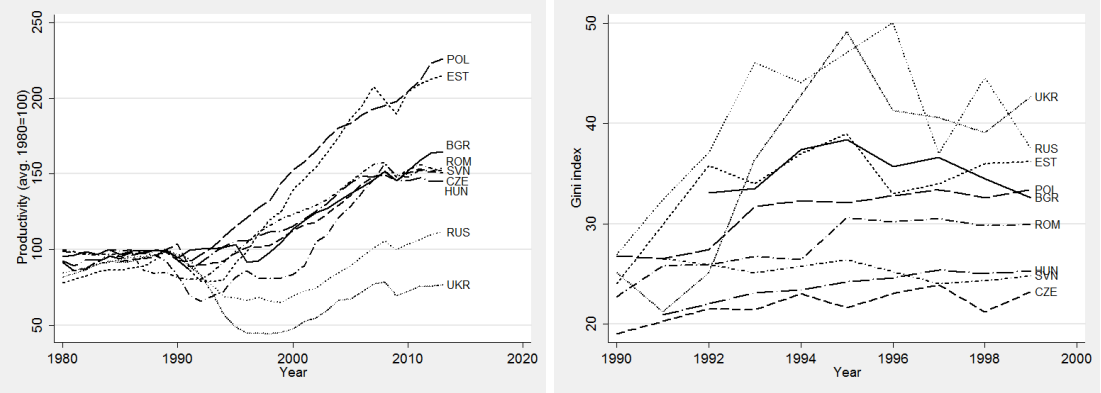


Figure 2: Productivity chain index (left) and Gini inequality index (right)

In the case of inequalities, data was extracted from the World Income Inequalities Database. This source contains information from almost all countries for an extensive period. Data are compiled from various sources, sometimes of different nature, which poses a problem of comparability.[21] To assure maximum coverage and maintain comparability, we work with estimates from Transmonee, which are based on household level data and use disposable income in local currencies to measure inequalities. Unfortunately, this source does not cover Estonia, nor some relevant years in the case of Russia and Ukraine. Thus, we complemented Transmonee data with estimates from additional sources. For Estonia, we employ measures based on household budget

[20] Conference Board data has also total hours worked, but this variable is only available as of 1995 for most of the countries in the analyzed literature, whereas for Ukraine it is missing for the entire period. We thus rely on per worker instead hourly productivity.

[21] Datasets vary on the unit of analysis (individual, household), the measure of inequalities (gross or net income, consumption) as well as indicators.

survey published by the Estonian Statistical Office (since 1993), and indicators from two articles for the remaining years: Alexeev and Gaddy (1993) for 1990 and Milanovic and Ying (1996) for 1992. For Ukraine, we complemented the available information with the results from Kakwani (1996) for 1990-1991 and Deininger and Squire (1996) for 1996. Finally, in the case of Russia, we used estimates from the country statistical office and the World Development Indicators. All these indicators cover inequalities in disposable income measured at household level.

For most transition economies analyzed in the literature, inequalities fluctuated, but the extent of change as well as adjustment paths differed. In the case of Czech Republic, Hungary and Slovenia, increments during the period were negligible and can well be the reflection of measurement errors. Ukraine, Russia, Estonia and Bulgaria as well as Poland experienced a stark increase in the inequalities, which peaked in mid-1990s, decreasing afterwards. Also Romania experienced an increase around that period, but maintained the higher level afterwards. Indeed, only in some countries (Russia, Ukraine and to a lesser extent Estonia) the Gini index varied considerably. In the remaining, the coefficient of variation (standard deviation to mean ratio) amounted to less than 0.1.

5.1 Short-term correlations

In Table 8, we present the results on the contemporaneous relation between different measures of job reallocation as well as productivity growth and the Gini index, respectively. Before we discuss the actual estimates, it is worth pointing that theoretically both job destruction and job creation should matter contemporaneously for the changes in productivity and inequality. This relationship is by no means causal – rather an automatic implication. With high job destruction, for example, unemployment should grow, i.e. nearly automatically boosting income inequalities. Also, recessionary pressure leading to higher job destructions are also periods of lower productivity growth. However, if firings were indicative of Schumpeterian creative destruction, productivity growth should be faster in these periods. Analogous reasoning applies for job creations.

Another important factor concerns the sample composition. As evident from Table 4 the country composition for the analyses of gross worker flows and (usually net) job flows overlap only partially. Namely, in the case of Estonia, Poland and Russia both are available (although sometimes for different periods). In the case of Czech Republic the literature provides only estimates for gross worker flows, whereas in the case of all other six countries, only job flows were reported in earlier studies. Thus, if the estimates for the net and gross flows differ, it may be both due to the economic processes and due to country specificity in the sample composition. To address this point, we provide estimates based on LiTs data, which are conceptually comparable to gross worker flows reported in the earlier studies.

In fact, we provide a variety of specifications. First, we include the estimates for the raw values from the literature (the first three columns in Table 8), separating the estimates for the gross worker flows and net job flows. However, these estimates from the literature used in columns (1)-(3) can be contaminated by the variation coming from the type of estimates available in the literature (e.g. only public sector or only manufacturing). Second, given that these distinctions might affect our result, as demonstrated by Table 6, we proceed to control for them following a two-step procedure: we regress our independent variables of interest in the paper characteristics (without year or country dummies) and then we regress inequality and productivity measures

on the residuals from the previous stage. Consequently, in the subsequent two specifications the explanatory variable is a residual from a specification which accounts for various properties of the data and measures. We display these results for the full set of available estimates in columns (4)-(5). Finally third, we provide conceptually comparable estimations where the measures of flows come from LiTs rather than the literature. We provide three specifications from the LiTS data: for the same years and countries as in the literature – columns (6) for (2) and (8) for (3) – for the same countries as in the literature but all years – columns (7) and (9), analogously, and for all the available countries and years in column (10). The intuition behind these three specifications is to disentangle the differences between the estimates obtained on the literature and the estimates obtained for the LiTS data into those that can be attributable to different sample structure and those that can be attributable to differences in measures of flows.

We find a fairly weak and negative relationship between job destruction and productivity growth for the estimates from the literature. In fact, the estimates are consistently negative, but loose significance in the case of the indicators for the worker flows. This lack of significance may actually come from the lower power due to lower number of observations. Indeed, comparable estimates from LiTS are also insignificant for the selected countries, but prove negative and significant for the specification where all countries and relevant years are included – column (10) of Table 8. This result suggests that quantitatively the recession explanation dominates the Schumpeterian explanation.

For job creation, the correlations with productivity are insignificant in the literature and the signs vary. However, when we rely on LiTS data, even for the same countries as int he literature, the results become significant and positive – columns (8) to (10) in Table 8. This positive correlation – even if not very robust – further strengthens the interpretation that economic performance is the mitigating factor behind the estimated link between job creation and productivity growth.

We also find a strong, robust and positive contemporaneous correlation between job flows and inequality. Regardless of the included controls and sample of countries, higher flows are associated with higher levels of inequality. One of the exceptions are the estimates which use only the indicators for the gross worker flows in the literature. However, the analogous estimations based on data from LiTS regain significance and maintain the large positive sign, which points to the low statistical power of estimates in column (2). Insignificant estimates for job creation in columns (4) and (5) – i.e. the specifications which include controls for the characteristics of the worker and sample – may too be explained by lower statistical power. First, note that the size of the estimate in column (4) is fairly comparable to column (1) for job creation and inequalities, but the standard errors are doubled when additional controls are included. When country and year effects are additionally included (in column (5) the size of the estimated coefficient is substantially reduced, which could suggest a considerable role for the country specificity. To account for that, the estimates based on indicators computed on LiTS data include controls for country effects. Even in the case of smaller samples, the results are all positive and significant – columns (6) to (10) in Table 8.

Table 8: Contemporaneous correlations between of labor market flows with productivity and inequalities

		Literature			Literature (+controls)		Life in Transition Survey				
		(1)	(2)	(3)	(4)	(5)	(6) as (2)	(7) as (2)	(8) as (3)	(9) as (3)	(10) all
		Productivity growth									
Job creation	β	-0.003	0.003	-0.000	-0.008	0.003	0.535	0.734	1.179***	0.589*	1.436***
	SE	(0.006)	(0.009)	(0.004)	(0.020)	(0.006)	(0.696)	(0.515)	(0.507)	(0.376)	(0.327)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.782	0.752	0.953	0.000	0.782	0.041	0.055	0.116	0.039	0.082
Job destruction	β	-0.069***	-0.113***	-0.005	-0.196***	-0.050**	-0.217	-0.321	0.768	0.566	-0.921***
	SE	(0.018)	(0.038)	(0.028)	(0.057)	(0.026)	(0.549)	(0.502)	(0.599)	(0.458)	(0.233)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.788	0.759	0.953	0.028	0.784	0.011	0.012	0.039	0.024	0.068
		Inequalities (Gini)									
Job creation	β	0.017***	0.023***	0.0003	0.006	-0.001	2.010***	1.392***	0.550*	0.817***	1.099***
	SE	(0.007)	(0.009)	(0.004)	(0.040)	(0.008)	(0.680)	(0.362)	(0.336)	(0.256)	(0.202)
	N	348	281	67	348	348	18	39	49	70	192
	R^2	0.902	0.899	0.954	0.000	0.901	0.402	0.303	0.063	0.145	0.152
Job destruction	β	0.144***	0.254***	0.019	0.361***	0.151***	1.464***	0.747**	0.522	0.793***	0.456***
	SE	(0.021)	(0.032)		(0.027) (0.107)	(0.030)	(0.667)	(0.427)	(0.388)	(0.321)	(0.181)
	N	348	281	67	348	348	18	39	49	70	192
	R^2	0.915	0.921	0.954	0.041	0.907	0.271	0.083	0.043	0.092	0.037

Notes: In columns 1 to 3 our main independent variables are the raw estimates of JC and JD from different papers. In (1) we use all flows, in (2) we keep only worker (gross) flows and in (3) we keep only job (net) flows. In columns (4) and (5), our right hand side variable of interest are the flows once the paper characteristics are taken into account, as in Table 6. In column (4) we use just the residuals, while in (5) we also add country and year controls. In column (6) to (10) we repeat the experiment from the first three columns on the LiTS database. In (6), we look at flows from the same countries and years than worker flows from the literature. Then, in (7) we restrict the sample to the countries for which we had information on worker flows from the literature, but we extend the time span to cover all years. Columns (8) and (9) are analogous to (6) and (7), with the difference that we keep countries for which we have information on net flows. In (10) we present the results for all countries and years with available information from the LiTS. Bootstrapped standard errors on parenthesis. ***,**,* indicate significance at the 5%, 10% and 15% level. Results for gross, net and excess reallocation reported in the appendix.

Such results may be indicative of two types of mechanisms. First points to low – perhaps even insufficient – generosity of the social safety nets in transition countries. The positive coefficients associated with job creation indicate that newly resulted in more dispersed income structures. In addition, relative to the "old" jobs, the newly created ones offered substantially worse or substantially better working conditions in terms of for example remuneration, wage arrears, etc. The positive correlation between both measures of job flows and inequalities seem to be a fairly universal phenomenon.

These contemporaneous correlations have no power to describe causal relationships. Yet, they can be indicative of the strength of the link between the job flows and the aggregate indicators such as productivity and inequalities. Namely, if these relationships are strong contemporaneously, they are more likely to exhibit long-term causal relationship implied by the theory. We formally test this contention in the next section.

5.2 The long-run effects

Given the data constraints, providing trend estimations is not feasible. However, we can relate the measures of labor market flows during the transition and the aggregate overall changes in productivity and inequalities. One such way is to rely on lagged dependent variable model, which we provide in Table A.7 and A.8 in the Appendix. However, to avoid loosing observations for countries or years – a problem particularly acute in the case of the estimates from the literature – we provide estimates for the lead observations of productivity growth and inequalities (dependent variable) rather than lags of the flows (independent variable).

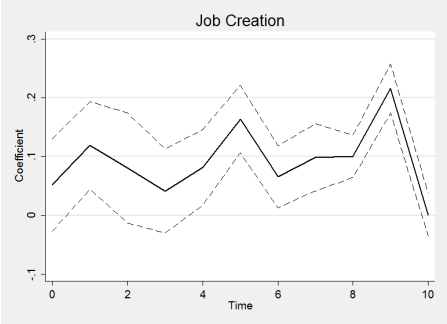
In the reminder of this section we compare the estimates for two samples. We consider a mean estimate for either job destruction or job creation from the literature for each country and year pair.[22] To avoid confusion of the estimates for net and gross flows in the literature, we only use the figures for the net flows. As analogous from LiTS, we take the indicators of hirings and separations for the same countries and years. Thus, the literature and LiTS are only due to the nature of the flow: net or gross.

Figure 3 displays correlations for job creations (literature) or hirings (LiTS) and productivity growth, whereas 4 does the same for job destructions (literature) or separations (LiTS).[23] These estimates confirm the lack of significance between the job creation (net job flows) in the literature and the rate of productivity growth. While these partial correlations are not particularly precisely estimated, they are virtually zero regardless of the time lag between the measured net flow and the productivity growth. Also the positive link for the hirings (gross worker flows) and productivity obtained from the LiTS data proves to be consistent, while the impulse from hirings is a lasting one. Why would net flows exhibit no link to productivity and gross flows have a strong and positive link even in the long run? One potential explanation may be that the majority of worker flows were not associated with the bankruptcies and start-ups, but rather restructuring and repositioning within the existing firms. For example, a manufacturing company needing to introduce new products (to stay competitive), modernizes the plants and production lines, which necessitates a change in the composition of skills. While net change in employment remains

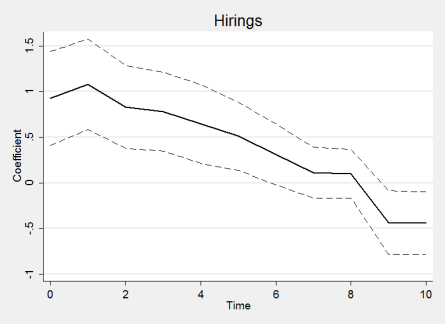
[22] These values are reported in Table A.1 in the Appendix.

[23] With the exception of taking the mean rather than all the estimates, Table 8 shows the same for the first period in column (2) for the literature and column (6) for LiTS. To make these estimates even more similar, we use the number of observations for each country-year pair as weights.

Figure 3: Productivity growth and job creation / hirings

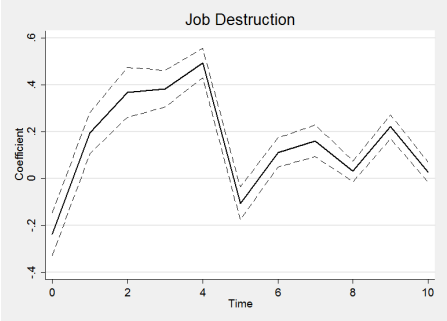


(a) literature

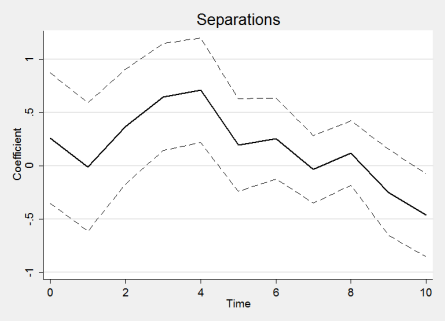


(b) LiTS, same countries and years

Figure 4: Productivity growth and job destruction / separations



(a) literature



(b) LiTS, same countries, same years

negligible (and thus unrelated to changes in productivity), the gross worker flows are substantial because of both the change itself and the churning needed for the new hires to actually match the firms need. A similar process may describe a situation when an existing company needs to develop a back office, but automatizes or outsources part of production.

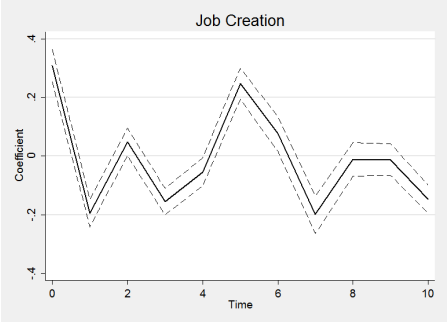
The analysis of the long-term relationship between job destruction or separations and productivity growth partially confirms this intuition. While the net flows – destructions – remain unrelated to any future rate of productivity growth, separations seem to exhibit some weak yet downward trend. This may be interpreted as evidence in favor of strong churning being inefficient.

The positive correlations between inequalities and labor market flows seem to be rather short-term.[24] The results displayed in Figure 5 and 6 reveals that over the long-run, the partial correlations decrease to negligible levels or effectively zero. We interpret these results as an indication that these are rather the working conditions than the weak safety nets that justify the results from Table 8.

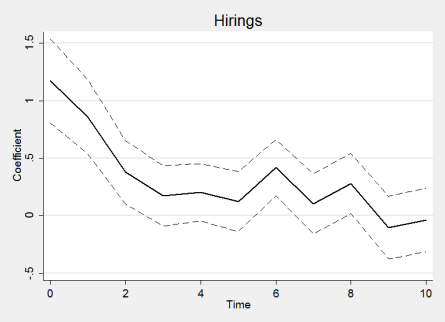
Are these results universal, or dependent upon country and period selection? To provide an

[24] Table A.3 discusses the availability of data sources for the indicators of inequalities in 2000s, whereas in Table A.6 we show the results for the alternative indicators. Despite issues with data availability, the results remain robust to the data source.

Figure 5: Inequalities and job creation / hirings

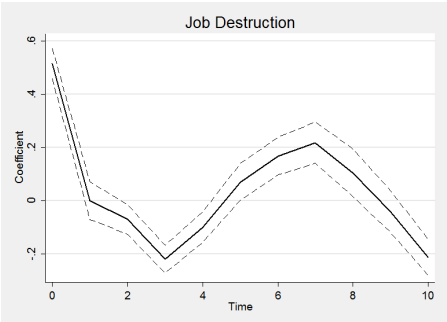


(a) literature

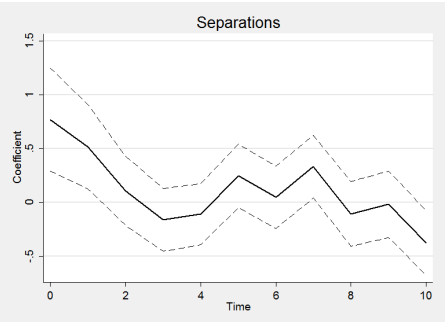


(b) LiTS, same countries and years

Figure 6: Inequalities and job destruction / separations

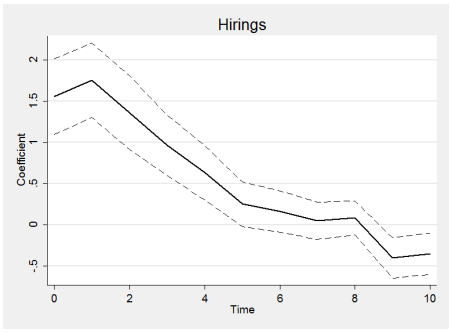


(a) literature

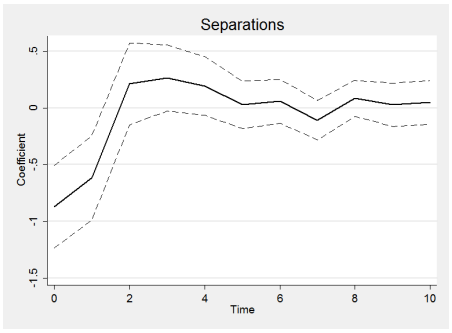


(b) LiTS, same countries and years

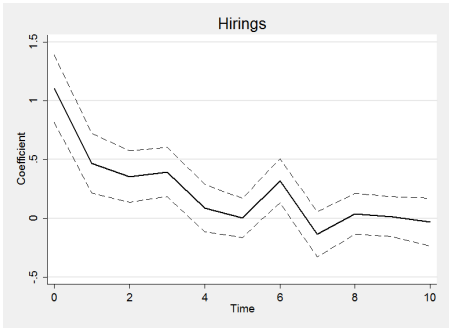
Figure 7: All countries and all years, LiTS



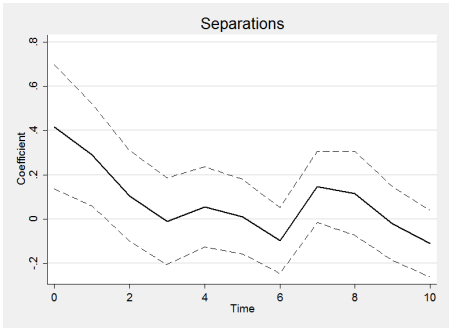
(a) Hiring and productivity growth



(b) Separations and productivity growth



(c) Hirings and inequalities



(d) Separations and inequalities

answer to this question we provide analogous estimates but using all countries and years from LiTS. As revealed by Figures 7a-7b, when all transition countries are taken over the entire decade of 1990s, the business cycle effects still quantitatively dominate. Hirings have a lasting positive effect on future productivity, whereas the separations exhibit negative correlation, but only in the short-run. Also the finding concerning the inequalities seems to be universal – relatively short-term strongly positive effects of labor market flows on inequalities are revealed by the data, see Figures 7c and 7d

The clear pattern for inequalities and much weaker and partial pattern for productivity growth seem to have at least two explanations. First, worker flows comprise also within industry changes, for example separations and hirings as well as gross job destructions and creations within even the contracting public sector. Thus, if new positions exhibit more wage dispersion – e.g. due to skill biased technological change – one should observe increased inequalities even if job flows are synchronized. Note, that the effects of net job flows and gross worker flows appear to work in the same direction.

Second, many of the transition countries cushioned the labor market adjustments with early retirement schemes, which can naturally mitigate the effect on inequalities. Surely, such policy exhibits in large job destructions (and firings), but not in inequalities, if the early pension benefits are more generous than – for example – unemployment benefits. Clearly, such policies break the long-term link between job flows and inequalities, which may explain why it is visible for job creation, but not in the case of job destruction.

6 Conclusions

Our objective in this paper has been to test empirically if massive and rapid labor reallocation exhibits a link with the productivity growth and inequalities. Such causal link has been postulated by economic theory and seems fairly intuitive as well as generally applicable to massive labor reallocations. While the policy relevance of this question remains high for both developed and emerging economies, contemporaneous data that can be used to address this problem is scarce.

We use the insights from rich, but diversified literature on labor flows during the transition from a centrally planned to market economic system in Central and Eastern Europe. Typically, economic transition from a centrally planned to a market economy produces "winners" and "loosers" (i.e. inequalities). It has been also believed that the change in the structure of output has followed the global competitive pressure towards comparative advantage and more productive sectors. In fact, while some of the transition economies have experienced a spectacular increase in labor productivity, there have also been some increases in inequalities. Admittedly, productivity growth becomes faster and inequalities growth becomes slower with the time from the onset of the transition.

The exploratory analysis of over 450 estimates provided by the earlier studies reveal some interesting patterns. First, against the conventional wisdom, large firms and public firms (typically state-owned or formerly state-owned) are characterized by net job destruction rates similar to the small firms and private firms (typically private incumbents). It is rather the lower job creation rates that differentiates the two. This channel – absent from most theoretical conceptualizations of economic transition – seems to be fairly important, because neither the estimates from the literature nor the cross-validation from LiTS data confirm the strong link between net job flows and productivity. In fact, we find little support to the claim that net job flows and productivity exhibit any long-run relationship, while the short-run link is weak and mostly driven by job destructions and thus seems to be more related to the recessionary pressure than to the Schumpeterian notions of creative destruction.

The link between job flows and inequalities is strong, positive and robust to the country or time selection. Yet, it is rather a short-term phenomenon, which points to the relevance of wage dispersion in the process of massive labor reallocation. We find little evidence to support the claim that the social safety nets have been insufficient to mitigate the costs of transition.

In addition to ask relevant policy questions, our research casts a shadow of doubt on the validity of extrapolating the results from the existing literature to the wider context of transition economies. Some of the links are only observed for the whole group of transition economies and cannot be identified using the evidence for the few countries analyzed in the earlier literature.

Surely, our research has some limitations. Our analysis remains silent about the institutional set up in which the massive labor reallocation took place. Their inclusion would lead to more complex models, where not only labor institutions (trade unions, minimum wages, etc.) are considered but also the privatization mechanisms. Given the data limitations, such analyses cannot be conducted using the estimates from the earlier literature. Another limitation of our research is that it focuses on the effect of reallocation level, and not on the speed of transition itself, which is potentially relevant as well. Also in this context, better and more comparable data are needed.

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A Appendix

Table A.1: Job creation and job destruction: average for country and year

	Bulgaria		Estonia		Hungary		Poland		Romania		Russia		Slovakia		Slovenia		Ukraine	
	JC	JD	JC	JD	JC	JD	JC	JD	JC	JD	JC	JD	JC	JD	JC	JD	JC	JD
1989			9.0	1.7			0.6	15.3			0.8	4.8						
1990	0.3	13.2	14.1	4.4	0.4	9.1	4.5	22.1	0.1	10.7	2.1	5.6			0.7	7.8		
1991	2.9	15.2	18.6	7.3	0.7	8.1			0.1	6.4	3.2	5.6			6.4	5.4		
1992	0.8	10.7	16.8	14.9	1.2	8.5			0.9	5.7	3.0	9.9			0.7	5.7	1.1	8.3
1993	11.0	6.3	14.7	14.1	4.4	7.1			28.3	5.0	1.2	14.5			4.3	3.2	1.1	11.2
1994	2.5	6.0	10.2	10.0			5.1	6.1			2.4	11.2			6.5	8.7	1.4	10.4
1995	3.2	3.3	8.6	7.6			3.6	6	6.3	9.2	2.8	9.6			3.1	6.8	1.7	10.8
1996	4.1	7.0	9.5	7.6			3.5	5.3	3.6	7.1	22.8	17.3			4.8	7.9	1.7	10.8
1997	1.4	5.2	8.7	7.9			4.5	6.3	3.7	9.9	2.5	10.8			5.4	6.0	2.0	9.1
1998			5.0	7.5			4.6	9.8			3.1	9.6			4.9	6.7	4.1	9.9
1999			6.0	8.1			4.7	13.8			5.6	6.6			5.4	6.1	6.1	8.6
2000													7.3	13.1	4.8	6.0		
2001													8.1	12.1				
2002													6.9	11.0				
2003													7.6	11.0				
2004											5.3	2.9						

Notes: Czech Republic omitted, because JC/JD estimates are lacking. The table presents the average value of the estimates of job creation and destruction in transition countries. All values were obtained using bootstrap, with 1000 repetitions each.

Table A.2: Results from the meta-regression: additional indicators of labor market flows

Gross reallocation	Worker flows			Job flows		
Only public firms	-6.069	-31.24***	-31.24***	-3.586***	-6.969***	-7.339***
	(6.988)	(9.963)	(10.48)	(1.143)	(1.877)	(1.882)
Only in manufacturing	-1.917	-27.09***	-27.09***	-5.199***	-8.206***	-8.904***
	(7.394)	(10.57)	(10.66)	(2.215)	(2.457)	(2.222)
Only large firms	-10.82	-25.66***	-25.66**	-3.797***	-4.916***	-5.162***
	(11.96)	(12.88)	(13.25)	(1.902)	(2.227)	(2.373)
Only small firms	0.261	-14.57	-14.57*	19.69***	9.263***	8.560**
	(8.712)	(10.44)	(9.941)	(4.551)	(4.673)	(4.701)
Controls for article	No	Yes	Yes	No	Yes	Yes
Controls for country	No	No	Yes	No	No	Yes
Controls for year	No	No	Yes	No	No	Yes
N	85	85	85	345	345	345
R-squared	0.052	0.315	0.443	0.238	0.345	0.395

Net reallocation	Worker Flows			Job Flows		
Only public firms	-13.91***	-26.09***	-26.09***	-3.100***	-5.518***	-6.013***
	(5.574)	(9.630)	(10.97)	(1.320)	(1.996)	(2.126)
Only in manufacturing	-10.85***	-23.03***	-23.03***	-10.00***	-7.058***	-7.198***
	(5.495)	(9.604)	(11.11)	(2.349)	(2.151)	(2.602)
Only large firms	-32.43***	-37.93***	-37.93***	-4.393***	-2.796	-2.579
	(11.43)	(13.25)	(14.85)	(1.854)	(2.594)	(3.040)
Only small firms	-6.344	-11.85	-11.85	4.030	0.769	0.961
	(7.867)	(10.03)	(10.72)	(4.323)	(4.431)	(4.294)
Controls for article	No	Yes	Yes	No	Yes	Yes
Controls for country	No	No	Yes	No	No	Yes
Controls for year	No	No	Yes	No	No	Yes
N	85	85	85	345	345	345
R-squared	0.174	0.219	0.233	0.113	0.166	0.193

Excess reallocation	Worker flows			Job flows		
Only public firms	0.971	-11.51***	-11.51***	-2.930***	-3.906***	-4.088***
	(3.835)	(3.637)	(3.415)	(0.618)	(0.890)	(0.891)
Only in manufacturing	8.184***	-4.301	-4.301	-1.025	-2.445***	-2.663***
	(4.106)	(6.074)	(3.681)	(0.831)	(1.103)	(1.101)
Only large firms	-10.28***	-17.76***	-17.76***	0.280	-1.643*	-1.720*
	(3.649)	(3.417)	(3.820)	(0.855)	(1.098)	(1.096)
Only small firms	9.345***	1.858	1.858	11.80***	7.644***	7.361***
	(4.632)	(4.697)	(3.354)	(1.790)	(1.834)	(1.806)
Controls for article	No	Yes	Yes	No	Yes	Yes
Controls for country	No	No	Yes	No	No	Yes
Controls for year	No	No	Yes	No	No	Yes
N	85	85	85	345	345	345
R-squared	0.175	0.430	0.686	0.338	0.551	0.623

Notes: The table extends the results from Table 6 to additional measures of job reallocation: gross reallocation, net reallocation and excess reallocation. First three columns correspond to measures of flows based on worker level data (gross flows) and measures of flows based on firm data (net flows). Bootstrapped (1000 repetitions) standard errors presented in parentheses. ***,**,* denote significance at the 5%,10% and 15% confidence level respectively.

Table A.3: Overlap between inequality and flows data by data source

	Transmonee (various years)		WDI	
Countries	Literature	LiTS	Literature	LiTS
ALB		0		1997 & 2002 & 2004 & 2005
ARM		1996 & 2002-2005		1996 & 1999 &2001
AZE		2000 2001		2001
BGR	1992-1994	1992-2005		1997
BIH		0		2001 & 2004 & 2005
BLR		1995-2005		1995-1998
CZE	1994-1998	1991-2005		-
EST	1995-2000	1995-2005		-
GEO		1998 2001 2002		1996 & 1999-2001 & 2003 & 2005
HRV		1998		1998-2001 & 2005
HUN	1991-1993	1991 1993-2005		1998
KAZ		2003-2005		1996 & 2001-2003
KGZ		1998-2005		1997
LTU		1994-2004		1993-1996
LVA		1997-2004(exc 2001)		1993 & 1995 & 1997 & 1999
MDA		1997 2000-2005		1992
MKD		1990 1994-2005		1998
MNE		0		
POL	1990&1994-1999	all	1990 & 1995-1998	1990 & 1992 & 1995-1998 & 2002
ROM	1993&1995-1997	all		2002
RUS	1994-1996 & 1998	1994-1997 & 1998 2000 2001	1996-1999	1994 & 1996-1999 & 2002 & 2003
SRB		0		-
SVK		1996-2005		-
SVN	1991-2000 (exc 1993)	1991 1992 1994-2003 2005	1996	1996
TJK		1999		2003 & 2004
UKR	1995 & 1999	1995 1999-2002	1997 & 1999	1997 & 1999 & 2005
UZB		2005		1998 &2000 & 2002 & 2003

Notes Table shows the country-year pairs for which information on inequalities is available ordered by source. The data is used in the sensitivity analysis in Table A.6

Table A.4: Relation between productivity and inequalities and reallocation measures

		Literature			Literature (+controls)		Life in Transition Survey				
		(1)	(2)	(3)	(4)	(5)	(6) as (2)	(7) as (2)	(8) as (3)	(9) as (3)	(10) all
		Productivity growth									
Gross reallocation	β	-0.011**	-0.008	-0.001	-0.030**	-0.001	0.058	0.166	0.941***	0.523**	-0.163
	SE	(0.006)	(0.008)	(0.004)	(0.016)	(0.007)	(0.406)	(0.349)	(0.364)	(0.273)	(0.216)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.783	0.752	0.953	0.006	0.782	0.001	0.006	0.140	0.057	0.003
Net reallocation	β	0.008	0.014	0.000	0.015	0.007	-0.616	-0.499	-0.608	-0.320	-1.060***
	SE	(0.006)	(0.010)	(0.005)	(0.019)	(0.006)	(0.575)	(0.569)	(0.624)	(0.454)	(0.216)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.783	0.753	0.953	0.001	0.783	0.076	0.022	0.023	0.008	0.100
Excess reallocation	β	-0.008	0.026*	0.019	-0.027	0.028*	0.241	0.245	0.903***	0.482***	0.711***
	SE	(0.010)	(0.016)	(0.015)	(0.040)	(0.017)	(0.335)	(0.290)	(0.314)	(0.235)	(0.200)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.782	0.753	0.954	0.001	0.783	0.036	0.020	0.168	0.065	0.056
		Inequalities (Gini)									
Gross reallocation	β	0.031***	0.047***	0.001	0.037	0.011*	1.236***	0.893***	0.515***	0.730***	0.769***
	SE	(0.008)	(0.011)	(0.004)	(0.038)	(0.008)	(0.360)	(0.238)	(0.242)	(0.180)	(0.133)
	N	348	281	67	348	348	18	39	49	70	192
	R^2	0.905	0.904	0.954	0.005	0.900	0.476	0.293	0.101	0.215	0.168
Net reallocation	β	-0.006	-0.004	-0.001	-0.023	-0.011*	-0.141	-0.052	-0.166	-0.289	-0.133
	SE	(0.007)	(0.009)	(0.006)	(0.034)	(0.007)	(1.246)	(0.576)	(0.408)	(0.330)	(0.182)
	N	348	281	67	348	348	18	39	49	70	192
	R^2	0.900	0.896	0.954	0.002	0.900	0.001	0.000	0.004	0.013	0.003
Excess reallocation	β	0.033***	0.089***	-0.007	0.103**	0.026*	0.899***	0.640***	0.433***	0.623***	0.672***
	SE	(0.011)	(0.021)	(0.008)	(0.060)	(0.017)	(0.338)	(0.211)	(0.210)	(0.156)	(0.118)
	N	348	281	67	348	348	18	39	49	70	192
	R^2	0.902	0.901	0.954	0.007	0.900	0.352	0.213	0.096	0.210	0.163

Notes: Table extends the results from Table 8 (in the main text) to additional measures of job reallocation: gross reallocation, net reallocation and excess reallocation. For more information on the specifications, refer to the notes on Table 8

Table A.5: Productivity alternative measure (Chain Index avg. 1980=100

		Literature			Literature (+controls)		Life in Transition Survey				
		(1)	(2)	(3)	(4)	(5)	(6) as (2)	(7) as (2)	(8) as (3)	(9) as (3)	(10) all
		Productivity growth									
Job creation	β	-0.042***	-0.054***	-0.002	-0.057	-0.012	-3.094***	0.649	1.416	0.616	-0.634
	SE	(0.016)	(0.024)	(0.006)	(0.040)	(0.015)	(0.994)	(1.274)	(1.072)	(0.894)	(0.507)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.816	0.809	0.972	0.002	0.814	0.409	0.007	0.041	0.008	0.007
Job destruction	β	-0.363***	-0.675***	-0.007	-0.593***	-0.304***	-0.741	-0.938	0.255	-0.196	-1.182***
	SE	(0.062)	(0.108)	(0.036)	(0.153)	(0.084)	(0.986)	(1.208)	(1.238)	(1.085)	(0.351)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.831	0.833	0.972	0.029	0.820	0.039	0.017	0.001	0.001	0.050
Gross reallocation	β	-0.080***	-0.111***	-0.002	-0.120***	-0.041***	-1.413***	-0.168	0.855	0.258	-1.202***
	SE	(0.018)	(0.029)	(0.006)	(0.037)	(0.016)	(0.636)	(0.844)	(0.785)	(0.656)	(0.311)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.821	0.815	0.972	0.010	0.815	0.261	0.001	0.028	0.003	0.065
Net reallocation	β	0.018	0.016	-0.001	0.017	0.015	0.435	-0.621	-1.148	-0.640	-0.711***
	SE	(0.015)	(0.025)	(0.006)	(0.041)	(0.015)	(1.082)	(1.384)	(1.269)	(1.063)	(0.336)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.815	0.808	0.972	0.000	0.815	0.011	0.006	0.020	0.006	0.020
Excess reallocation	β	-0.085***	-0.155***	0.021	-0.359***	-0.152***	-1.135**	0.043	0.996	0.375	-0.508**
	SE	(0.033)	(0.057)	(0.023)	(0.110)	(0.060)	(0.541)	(0.706)	(0.680)	(0.566)	(0.304)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.816	0.810	0.972	0.015	0.817	0.239	0.000	0.050	0.007	0.013

Notes: Table repeats specifications from Table 8 (in the main text) to an alternative measure of productivity: a chain index with the average of 1980's as a reference year. For more information on the specifications, refer to the notes on Table 8

Table A.6: Sensitivity analysis: different data sources on inequalities

Gini index		Literature			Literature (+controls)		Life in Transition Survey				
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Transmonee									
Job creation	β	0.012***	-0.002	0.014***	0.004	0.003	3.955	1.541***	1.481***	0.729*	0.470*
	SE	(0.005)	(0.024)	(0.005)	(0.074)	(0.005)	(3.258)	(0.684)	(0.551)	(0.460)	(0.322)
	N	231	27	204	231	231	10	26	39	53	92
	R^2	0.971	0.992	0.971	0.000	0.970	0.264	0.125	0.192	0.061	0.025
Job destruction	β	0.029***	-0.005	0.052***	0.027	0.024	-1.497	-0.036	0.873*	0.126	0.465**
	SE	(0.014)	(0.005)	(0.022)	(0.193)	(0.020)	(2.772)	(0.941)	(0.531)	(0.469)	(0.253)
	N	231	27	204	231	231	10	26	39	53	92
	R^2	0.971	0.992	0.971	0.000	0.971	0.042	0.000	0.068	0.002	0.028
		WDI									
Job creation	β	0.003	0.004	-0.534	-0.006	0.001	3.775	1.921***	1.043	1.195	-0.172
	SE	(0.003)	(0.004)	(0.000)	(0.092)	(0.001)	(3.769)	(0.833)	(1.269)	(0.914)	(0.513)
	N	95	91	4	98	95	4	10	12	15	37
	R^2	0.989	0.989	1.000	0.000	0.989	0.796	0.452	0.073	0.133	0.005
Job destruction	β	-0.001	0.008	2.405	0.096	-0.014*	0.837	-0.242	-0.217	-0.352	0.041
	SE	(0.009)	(0.011)	(0.000)	(0.265)	(0.008)	(69.512)	(0.792)	(1.185)	(0.766)	(0.282)
	N	95	91	4	98	95	4	10	12	15	37
	R^2	0.989	0.989	1.000	0.002	0.989	0.078	0.007	0.005	0.014	0.000

Notes: Table repeats specifications from Table 8 (in the main text) to different subsamples of countries, based on the available information on inequalities by source. The upper panel corresponds to estimates of the Gini Index from Transmonee (various years) and the lower from the World Development Indicators (WDI). For more details on the countries included review table A.3. For more information on the specifications, refer to the notes on Table 8

Table A.7: The long-term relationship between job flows and productivity measures

	From the literature					From the literature				
Lag Number	JC	JD	Gross	Net	Excess	Hire	Sep	Gross	Net	Excess
0	0.03	-0.29***	-0.08***	0.17***	0.19***	1.09***	0.12	0.60**	-0.74	0.65***
	(0.04)	(0.05)	(0.03)	(0.03)	(0.05)	(0.44)	(0.50)	(0.32)	(0.51)	(0.27)
1	-0.01	0.12***	0.03	-0.07***	-0.00	1.22***	-0.04	0.59**	-0.68	0.63***
	(0.04)	(0.05)	(0.03)	(0.03)	(0.05)	(0.41)	(0.47)	(0.30)	(0.48)	(0.25)
2	-0.03	0.38***	0.11***	-0.21***	-0.03	0.81**	0.35	0.56**	0.03	0.40*
	(0.05)	(0.06)	(0.03)	(0.04)	(0.06)	(0.41)	(0.45)	(0.29)	(0.47)	(0.25)
3	-0.03	0.43***	0.12***	-0.24***	0.01	0.37	0.35	0.34	-0.36	0.35**
	(0.04)	(0.04)	(0.03)	(0.03)	(0.05)	(0.34)	(0.37)	(0.24)	(0.39)	(0.20)
4	0.04	0.55***	0.19***	-0.25***	0.25***	0.18	0.37	0.26	0.43	0.06
	(0.03)	(0.03)	(0.02)	(0.03)	(0.04)	(0.31)	(0.33)	(0.22)	(0.35)	(0.19)
5	0.25***	-0.03	0.11***	0.21***	0.32***	0.32	-0.16	0.09	0.09	0.04
	(0.03)	(0.04)	(0.02)	(0.03)	(0.04)	(0.30)	(0.33)	(0.22)	(0.35)	(0.19)
6	0.11***	0.15***	0.10***	0.01	0.02	0.14	0.13	0.13	-0.10	0.12
	(0.03)	(0.03)	(0.02)	(0.02)	(0.04)	(0.29)	(0.31)	(0.21)	(0.33)	(0.18)
7	0.13***	0.19***	0.12***	0.00	0.25***	0.04	-0.06	-0.01	0.11	-0.04
	(0.03)	(0.04)	(0.02)	(0.03)	(0.04)	(0.25)	(0.26)	(0.17)	(0.28)	(0.15)
8	0.15***	0.03	0.08***	0.10***	0.10***	0.30*	0.19	0.23**	0.05	0.16
	(0.02)	(0.02)	(0.01)	(0.02)	(0.03)	(0.18)	(0.20)	(0.13)	(0.21)	(0.11)
9	0.15***	0.17***	0.13***	0.03*	-0.08***	0.17	0.02	0.09	-0.09	0.09
	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)	(0.22)	(0.24)	(0.16)	(0.25)	(0.13)
10	0.02	0.03	0.02*	0.00	0.00	-0.35	-0.45*	-0.37**	-0.17	-0.22
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.27)	(0.29)	(0.19)	(0.31)	(0.16)
N	63	63	63	63	63	63	63	63	63	63

Notes: Table shows the results from regressing leads of productivity growth on values of job flows obtained from the literature and from the Life in Transition Survey. Each cell represents a different regression. The results from this table were used in 3.

Table A.8: The long-term relationship between job flows and inequalities

	From the literature					From the literature				
Lag Number	JC	JD	Gross	Net	Excess	Hire	Sep	Gross	Net	Excess
0	0.101	0.603***	0.182**	-0.067	0.102	1.03***	0.79***	0.82***	-0.21	0.63***
	(0.115)	(0.192)	(0.090)	(0.112)	(0.215)	(0.32)	(0.38)	(0.22)	(0.45)	(0.19)
1	-0.128	-0.041	-0.094	-0.094	-0.194	0.53***	0.15	0.36**	-0.47**	0.40***
	(0.088)	(0.150)	(0.072)	(0.081)	(0.154)	(0.25)	(0.28)	(0.19)	(0.27)	(0.15)
2	0.024	-0.118	-0.011	0.055	0.260*	0.31	-0.16	0.08	-0.09	0.09
	(0.088)	(0.150)	(0.071)	(0.081)	(0.156)	(0.22)	(0.24)	(0.16)	(0.25)	(0.13)
3	-0.083	-0.157	-0.087	-0.033	-0.105	0.15	-0.19	-0.01	-0.02	-0.00
	(0.098)	(0.180)	(0.080)	(0.094)	(0.178)	(0.23)	(0.24)	(0.16)	(0.26)	(0.14)
4	0.053	-0.022	0.032	0.054	0.059	0.04	-0.19	-0.06	-0.06	-0.03
	(0.106)	(0.199)	(0.087)	(0.100)	(0.192)	(0.21)	(0.23)	(0.15)	(0.24)	(0.13)
5	0.101	0.383**	0.143*	-0.006	0.280	0.24	0.12	0.17	-0.10	0.15
	(0.109)	(0.197)	(0.088)	(0.104)	(0.196)	(0.20)	(0.21)	(0.14)	(0.22)	(0.12)
6	0.069	0.554***	0.170**	-0.097	0.024	0.38**	-0.23	0.09	-0.47**	0.20*
	(0.126)	(0.199)	(0.100)	(0.115)	(0.233)	(0.22)	(0.24)	(0.16)	(0.25)	(0.14)
7	-0.173*	0.231	-0.066	-0.213***	-0.263	0.13	0.35*	0.22	-0.06	0.18
	(0.110)	(0.195)	(0.092)	(0.099)	(0.204)	(0.22)	(0.23)	(0.15)	(0.25)	(0.13)
8	-0.064	0.412***	0.045	-0.168*	-0.093	0.49***	-0.14	0.19	0.02	0.13
	(0.113)	(0.190)	(0.093)	(0.102)	(0.209)	(0.21)	(0.24)	(0.16)	(0.25)	(0.13)
9	-0.053	0.036	-0.027	-0.057	-0.108	-0.02	0.04	0.00	-0.07	0.02
	(0.103)	(0.178)	(0.083)	(0.096)	(0.187)	(0.23)	(0.24)	(0.16)	(0.26)	(0.14)
10	-0.057	-0.110	-0.062	-0.017	0.006	0.03	-0.22	-0.08	-0.13	-0.02
	(0.117)	(0.201)	(0.095)	(0.109)	(0.220)	(0.22)	(0.24)	(0.16)	(0.25)	(0.14)

Notes: Table shows the results from regressing leads of the Gini index on values of job flows obtained from the literature and from the Life in Transition Survey. The number of observations depends on available information at the country level and it varied from 54 to 67 accordingly.

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