Effects of Labor Reallocation on Productivity and Inequality – Insights from 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 income inequality is ambiguous. Do reallocations with more flows tend to produce higher productivity growth? Does such a link appear at the expense of higher income inequality? 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 have collected over 450 estimates of job flows from the literature and used these inputs to estimate the short-run and long-run relationship between labor market flows, labor productivity and income inequality. We apply the tools typical for a meta-analysis to verify the empirical regularities between labor flows and productivity growth as well as income inequality. Our findings suggest only weak and short term links with productivity, driven predominantly by business cycles. However, data reveal a strong pattern for income inequality in the short-run - more churning during reallocation is associated with a level effect towards increased Gini indices.

JEL Codes: D21, D24, D92, G21
Key words: transition, job creation, job destruction, worker flows, unemployment

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1 Introduction

Both positive and adverse economic shocks often necessitate a change in the allocation of capital and labor between industries (cfr. Blanchard et al. 2014). Over the recent Great Recession, large structural shifts were observed in both the US (e.g. Elsby et al. 2010, Herkenhoff and Ohanian 2011) and the European economies (e.g. Burda et al. 2011, Van Dalen and Henkens 2013, Anghel et al. 2014, Hogrefe and Sachs 2014). Sectoral reallocation can play a considerable part in reinforcing the recessionary pressure, as argued by Aaronson et al. (2004), Herkenhoff and Ohanian (2011) and Amable and Mayhew (2011) amongst others. As emphasized by Hogrefe and Sachs (2014), labor reallocation in both advanced and emerging economies intensified recently. The question arises whether these reallocations should happen with *laissez-faire* churning. Perhaps without a policy intervention churning becomes excessive, bringing about productivity and welfare losses in the course of adjustment.

Theoretical foundations to this question have been developed in models envisioning a flow of workers from a shrinking to an expanding sector. In the context of economic transition, the theoretical underpinnings to this debate were provided by Aghion and Blanchard (1994) who operationalized the concept of the optimal speed of transition. With further refinements, these models try to capture the process of a decline in the inefficient sector and the emergence of a new sector, with workers forced to relocate from jobs in the old sector to those in the new emerging firms.[1] In the context of a sectoral change, a similar approach was proposed in a series of theoretical contributions by Caballero and Hammour (1996a, 1996b, 1998, 2000), who conceptualize reallocation as a flow of workers between industries. Following these two conceptualizations, faster and synchronized labor reallocation should be conducive to labor productivity with a potential welfare trade off associated with temporary increase in income inequality due to churning. Moreover, de-synchronized, i.e. excessively fast, job destruction rates can reinforce the upward pressure on income inequality, but should have little or no effect on labor productivity growth.

After nearly three decades since the onset of economic transition in Central and Eastern Europe (CEE), the experience from CEE countries can provide useful insights into the empirical validity of the theoretical predictions. With a varied performance across the transition economies, country level studies can at best demonstrate the consequences of particular policy choices, but they cannot provide a general overview of the link between the speed of workers' reallocation and economic performance (see Fidrmuc 2003, Aristei and Perugini 2012, Peev and Mueller 2012, Amin and Djankov 2014). In analyzing the worker flows in transition economies one encounters a methodological challenge of how one ought to capture the best policy measure associated with worker flows. Godoy and Stiglitz (2006) rely on a measure used widely in the literature, namely the level and speed of privatization. Yet the government's ability to privatize at a certain moment depends crucially on the contemporaneous economic performance, reinforcing the obvious link between business cycles and worker flows. Moreover, flows become dependent upon initial conditions (see BenYishay and Grosjean 2014). In addition, privatization may mean both job flows (with new private owners preserving employment level in former state-owned enterprise)

[1] Naturally, there is also a second strand of the theoretical literature, which focuses on the political economy aspects of shock therapy, see Marangos (2002) for an overview while Rovelli and Zaiceva (2013), Murtin and Wacziarg (2014) provide recent extensions.

and worker flows (with new private owners reducing jobs in a formerly state-owned enterprise). Privatization indicators may also overlook significant flows (e.g. a state-owned enterprise going bankrupt without being privatized with workers being forced to seek employment elsewhere). Consequently, analyses using privatization as a measure of labor market reallocation cannot satisfactorily capture the workers and jobs flows – a channel of key policy interest.

Attractive alternatives to the speed and level of privatization would be indicators of worker flows. However, most transition countries were not collecting data on gross worker flows. Data on net worker flows have been collected in national labor force surveys of most transition economies from mid-to-late 1990s, but these indicators – usually calculated as a change over time in the level of employment by sector and/or ownership category – are contaminated by job-to-job flows within sectors and ownership categories, as well as flows from and into non-employment. Finally, in analysis of this type, it would be desirable to compare worker flows with job creation and job destruction. These indicators are also affected by the discrepancies between gross and net measures – it is possible that in a given time period an enterprise or sector experienced no or negligible net flows while having substantial gross flows.

These data requirements and limited availability of data have affected the literature. First, most studies cover one or at the most few countries. Second, they often rely on dedicated data sets (such as incidental surveys), which limits the number of years for which analyses could be performed. Third, because different authors used data from different sources on different countries in different periods, they are rarely directly comparable. Finally, authors have addressed the research question with different methodologies and variables (e.g., job flows vs. worker flows, net measures vs. gross indicators and different model specifications). Thus, synthesizing the results is not a simple task.

Our objective is to contribute to the literature using the tools from a meta-analysis. Exploiting the results from a wide variety of studies, we address the question of whether a larger scope of worker reallocation is associated with higher rate of productivity growth and higher (disposable) income inequality. While the academic and policy relevance of this question is obvious, providing an answer would not be feasible if one were to rely on data from only one or a few countries. A meta-analysis allows researchers to partially overcome the constraints imposed by data availability. We also test the validity of these results using a comprehensive recent dataset on worker flows in CEE countries during the period of economic transition.

Given its diversity, the evidence from the economic transition in CEE is of a wider appeal for at least two reasons. First, it provides a large *quasi*-experiment, with a set of countries pursuing unique policy mix at differentiated rates. The evidence gathered in these case and cross-sectional studies can constitute a relatively general guidance for other countries experiencing large scale labor reallocation.[2] Second, given the time elapsed since the beginning of the transition, the long-term effects can already be observed.

We find that the link between job flows and productivity is weak, mostly contemporaneous, and that it occurs mainly through job creation/hiring. On the other hand, we show that the link between job flows and inequality is strong and robust. In the short run, higher job flows tend to be associated with increasing income inequality. In the long run, the effects come mostly

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

from job creation/hiring. These findings suggest that it is the lack of synchronization between job creation and job destruction that contributes to less equal economic outcomes. However, the fact that the strong correlation is between inequality and job creation/hiring suggests that it is wage dispersion in the newly created jobs rather than insufficient social safety nets that drives income inequality. Overall, the links postulated by the theory do not find much support in the data. In addition, they seem to have been mitigated by a number of factors unaccounted for in the literature. One important factor may be the scale and scope of job destruction/separation in the emerging sectors as opposed to the decaying ones.

The remainder of 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 describe the procedure of collecting the data for this quantitative analysis of the literature. Section 4 provides an overview of the findings in the literature, elaborating on the cross-country differences 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. In this section we also provide the cross-validation with the alternative sources of data. The concluding section summarizes the policy implications of our study.

2 Theoretical insights

There are two perspectives on labor reallocation: job flows and worker flows. Job flows are obtained from firm-level data and represent the change in the number of employees within a period of time. Worker flows correspond to the movement of workers in and out of the companies as well as in and out of the labor market.[3] In an extreme case, if all workers swapped firms, net and gross job flows would be equal to zero, net worker flows would be equal to zero and gross worker flows would be twice the number of workers. Job destruction in the decaying sector as well as the job creation in the emerging sector can occur in three different forms: ownership change (e.g. privatization), shut-down or a combination of the two. With pure ownership change, workers stay in the firm, i.e. job destruction and creation occurs with no worker flows. However, if a company exits the market and a new sector emerges – as is posited by theories of the optimal speed of transition – workers flow between jobs in different companies, possibly with a spell of unemployment between the two jobs. Redundancies in the presence of ownership change come from the new owner reducing employment, thus causing job destructions and forcing worker flows in both gross and net terms.

The distinction between job and worker flows is not only important conceptually but also empirically. Analyzing gross worker flows typically requires individual-level data, such as those collected in labor force surveys whereas gross job flows can only be studied with firm-level databases. To analyze net flows – for both workers and jobs – it is sufficient to rely on more readily available aggregate statistics, such as the overall change in sectoral employment or firm-level change in headcount, within a given time period such as one year. Given the well documented lack of reliable information at the level of individuals or detailed employment statistics for firms,

[3] In the reminder of this paper, we refer to job flows for job creation and destruction, and to worker flows for hirings and separations.

a large part of the literature has focused on net worker flows or net job flows, see Davis and Haltiwanger (1996). This has important consequences for building a link between theoretical models and empirical analyses. Specifically, the former typically impose two stylized features: firms only adjust one way (i.e. gross and net flows are equivalent) and model mechanics focus on gross worker flows.

The influential model of Aghion and Blanchard (1994), which provides an intuitive mechanism relating labor reallocation to productivity, is no exception from this rule. An economy has two sectors: incumbent inefficient public sector and private newcomers with an exogenous efficiency advantage. With a 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 in the public sector, the state makes the workers available for hire in the private sector. Shrinking the size of the state sector has two opposing effects. First, redundant workers seeking a new job generate downward wage pressure, facilitating job creation in the private sector. Second, with a growing pool of unemployed workers, the need for social nets emerges, funded by taxing labor and thus creating a wedge between the net wage and cost of employment. Consequently, excessive job destruction may actually diminish job creation. Depending on the synchronization between a downward pressure on wage expectations of the job seekers and an upward pressure on non-wage employment costs, the economy can pursue transition on a balanced path of fairly low unemployment or enter an unstable equilibrium with unemployment fluctuating at relatively high levels[4]

The Aghion and Blanchard (1994) framework with its subsequent extensions[5], provides insights into the possible link between worker reallocation and economic efficiency. On the one hand, excessive reallocation implies 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 situation. On the other hand, higher unemployment may be consistent with the selection into employment of only more productive individuals as well as faster adjustment from misallocation to optimal allocation of both capital and labor. Consequently, a larger scope of worker reallocation – more churning – would be associated with higher productivity growth.

However, any job destruction even if synchronized with job creation rates 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 a long matching process represents an efficiency loss, i.e. it lowers the relation between the actual and potential productivity level and thus growth. While the transition economies experienced job and worker flows – through privatizations and bankruptcy/redundancies in varying proportions – their effects on productivity and inequality are bound to differ. Pure privatization should imply a positive effect on productivity with no paramount effect on inequality in the short run (i.e. until new

[4]The objective of the government was not relevant for the empirical literature and thus we do not focus on it. The key feature of the Aghion and Blanchard (1994) model that attracted research attention was the synchronization between the job destruction and job creation and the consequences of the de-synchronization in terms of unemployment and wages.

[5]The extensions encompass various aspects of the reallocation process. Boeri (2000), Balla et al. (2008) introduced heterogeneity among workers, Papapanagos and Sanfey (2003) introduced the possibility of migration, Tichit (2006) accounted for inactivity and Bruno (2006) allowed for job destruction in the private sector.

wage structure emerges). Firm shut-downs and mergers generate worker flows, thus necessitating the channels such as de-synchronization and unstable equilibria, misallocation as well as possibly lengthy churning – see Beauchemin and Tasci (2014) as well as Mukoyama (2014) for a recent theoretical treatment.

Summarizing, the optimal speed of transition theory provides some grounds to expect a positive link between job destruction, or excess job destruction, and income inequality, but the models have little predictive power for job creation as well as net/gross worker flows. In terms of a link to productivity, both positive and negative correlations are possible on theoretical grounds, the coefficients should be larger 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 theoretical predictions to empirical test. We collect the estimates on job and worker flows from the literature and complement them 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 income inequality

3 Sampling of studies

We obtained the list of articles for our quantitative analysis from EconLit.[6] In the initial sample we included all published articles and book chapters in English appearing under the key words: "reallocation" and "transition". From this list we excluded studies that were purely theoretical or relied only on simulations.

The search generated 131 papers, of which 16 were not in English and 19 were theoretical or simulation exercises. We reviewed each of the remaining 96 papers and eliminated 67 papers that were unrelated to labor reallocation (e.g. those dealing with financial flows and land property changes).To limit the risk that a relevant paper remains unaccounted for, we carefully explored the references list of the relevant studies. This additional search increased the number of papers by 5.

An inspection of the relevant papers indicated that they vary in terms of model specification, data and variables as well as statistics reported. Given the focus of our research, we used papers that contained conceptually comparable estimates of labor market flows for the transition economies. Thus, our quantitative analysis includes all studies which reported usable[7] estimates of job flows (whether job creation and destruction or hirings and separations) for the transition

[6] See Stanley and Jarrell (2005) for the comparison of validity between EconLit and GoogleScholar as well as other sources. Given that the literature we analyze dates mostly to the 1990s and 2000s, our focus on published papers does not seem to impose an excessively binding constraint on the selection of papers.

[7] Jurajda and Terrell (2003) include a graphical analysis of flows in Czech Republic and Estonia, but not the numerical results. We also could not use all the estimates from Walsh (2003) as in some cases, the author reports only the sum of job creation and job destruction, making the estimates of the underlying flows undecipherable. Turunen (2004) includes a transition matrix, but not the number of individuals initially in each state. Schaffner (2011) provides comparison between East and West Germany aggregated over time. Earle (2012) presents both limitations: the transition matrix does not allow to recover the size of the flows and the flows are calculated over periods longer than one year.

economies of Central and Eastern Europe.[8] Within the sample of articles on transition economies, we could not include papers which do not report suitable information. In total, 18 articles comprised the relevant indicators for the CEE countries during the economic transition (see Table 1).

Table 1: List of studies included in the analysis

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

Note: Firm indicates the data come from a national registry of firms. F-Dedicated indicates data on firms collected by the researcher. Amadeus indicates data that come from the Bureau van Dijk database. In Table A.1 in the online appendix, the number of estimates is presented by country and year.

In total, the literature provides information on job flows in ten transition countries. These studies present many common features. First, they all use annual data. On the one hand this is suitable for the purposes of this quantitative analysis of the literature, as the reported estimates are comparable in terms of time frame. On the other hand, yearly statistics necessarily overlook flows with unemployment spells shorter than a year as well as seasonal flows – see Davis and Haltiwanger (1996, for an overview of the consequences). Second, the studies refer to either firm-level or individual-level flows, which again increases comparability, for there are no estimates of e.g. plant-level worker or job flows. Third, due to data availability constraints, most studies focus on one country, further highlighting the value of a comparative perspective.[9] Fourth, although

[8] With these criteria, analyses on Danish data (Albæk and Hansen 2004), studies of the US economy (Davis and Haltiwanger 1992, Golan et al. 2007, Walker 2013), and the works on China were dropped from further analysis. While indeed China underwent significant changes in the employment structure over the last two decades, reallocation in China is related to the urban/rural migrations and changes in the agricultural sector, which are not captured by the models in the spirit of Aghion and Blanchard (1994), see Dong and Xu (2009).

[9] The few notable exceptions comprise Faggio and Konings (2003), where the authors compare flows for five different economies and Bilsen and Konings (1998), which studies the behavior of firms in Bulgaria, Hungary and Romania. Note that Jurajda and Terrell (2003) have a comparative analysis of Estonia and the Czech Republic, while Mitra et al. (2014) as well as Tyrowicz and van der Velde (2014) provide a comparative analysis, as they

almost half of the papers were published over just a two-year period (2002-2003), all papers except two focus on the first decade of the economic transition.

Apart from commonalities, this set of publications varies on two important accounts: the measures and the data. Roughly two thirds of the papers employ firm-level data, while the remaining use worker-level data, thus reporting estimates of hirings and separations. As to the data, while all articles at worker level use national labor force surveys, the picture on firm level data is less homogeneous. Articles from this group employed mostly data gathered by national administrative bodies or statistical offices, followed by Amadeus and dedicated surveys. Also, most of the estimates come form the early transition, as much as half of them are from the 1992 to 1996 period.

Different data sources placed constraints on the types of flows that could be observed. Analyses based on Amadeus capture only net flows from and to large companies, as the threshold for participating in the survey excludes small firms.[10] While several articles distinguished the dynamics of job flows by firm size according to the number of employees (small, medium, large, very large), the categories overlap only partially. For example, Bojnec and Konings (1998) define small firms are those employing less than 20 employees, for Siebertova and Senaj (2007) the threshold value is less than 50 employees whereas for Acquisti and Lehmann (2000) use a definition of 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 Material Production System for reporting the economic categories under central planning. 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. 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 frequent. Only nine papers provided separate analyses for the public and the private sector.

Summarizing, in total the literature reports 454 estimates of flows in 18 articles, spanning the years between 1985 and 2004 in 10 transition economies. In order to focus on reallocation due to the economic transition, we limit our analysis to estimates reported for the time periods prior to 2001, which results in the final dataset of 430 observations. In the subsequent sections we move to an exploratory meta-analysis and an informal meta-regression to test intuitions on the link between labor market flows on the one hand and on the other: labor productivity growth as well as inequality.

4 Quantitative analysis of the studies

The quantitative analysis of the literature suggests that Estonia and Romania experienced the highest job creation; while the lowest estimates come from Hungary and Ukraine, followed closely

employed international databases on firms and workers, respectively. However, even though both papers *use* measures of job creation and destruction in their analysis, the estimates are not reported and hence these papers were excluded from further analysis.

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

by Poland and Bulgaria. In terms of job destruction, Poland, Slovakia, and Russia were the countries with the highest estimates. ANOVA test confirms that the estimates are all statistically different. From Table 2 we infer that countries differed in terms of gross, net and excess reallocation as well[11]. Besides Romania and Estonia, all 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.

Table 2: 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	28.08	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: The means are equivalent to effect sizes for a given type of flow and a country (averaged over time). In Table A.2 in the Appendix we present the average values (effect sizes) of job creation and destruction by country and year.

All countries except Bulgaria and Estonia appear to have a similar pattern: first, they experienced lower levels of job creation in the early 1990s converging to approximately 5%. 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. For the estimates of job destruction 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 number between 5% and 7%, which is slightly lower than the rates observed in the US or UK, but similar to continental Western European countries (see Davis and Haltiwanger 1996). 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 throughout the entire period, whereas in the case of Slovenia it was fairly stable throughout the entire analyzed period.

To analyze synthetically the properties of the estimates for data-sources, data types, countries and periods, we conduct several regressions, exploiting the variation of the measured labor market flows in the literature, see Table 3. It would not be accurate to call our analysis a "meta-

[11]Gross, net and excess are three additional measures of reallocation. Gross is the sum of job creation and destruction; net is the difference between creation and destruction, while excess is defined as gross flows minus the absolute value of net flows.

regression" because studies typically do not report measures of precision for the estimates of labor market flows. Moreover, we lack an adequate counterpart for the "true effect" explored in other meta-analysis: there are no clear priors on what the value of these flows should be, especially given the country, sector and time related heterogeneity and the use of different flow measures -at worker and at jobs level. Given these constraints, we estimate a model with various measures of labor market flow on the LHS and characteristics of the study on the RHS. We show separately the estimates for job creation in columns (1) to (4) and job destruction in columns (5) to (8). The first column in both sets of equations reports the average size of flows for a given subsample of estimates. In the remaining columns, we introduce controls for article, country and year. Adding these controls is meant to serve as a test on the robustness of the estimated relationships between estimate properties and its variation.

Intuitively, estimates from the firm level data tend to be much lower than those from a worker level, as revealed by the comparison between the top and the bottom panel of columns (1) and (4). Naturally, part of the difference might be a by-product of other characteristics of the estimates; for example, ownership and industry specificity. Notably job creation appears to be lower in manufacturing than in the service sector; the pace of job destruction was remarkably even across industries. Also – contrary to our initial expectations – public sector was not just shrinking. Admittedly, it was much less active job creation, the values are large and positive. In terms of job destruction, the public sector was comparable to the rest of the economy. Finally, smaller firms[12] prove to be more dynamic than larger ones as they accommodated shocks by adjusting labor demand. There may also be a selection bias, as small firms are more likely to belong to the private sector.

These insights do not conform with the narrative of Aghion and Blanchard (1994), and subsequent theoretical contributions. When it comes to creation, public, manufacturing and large firms seem to be characterized by lower estimates of the flows. Thus, theories of transition 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

Summarizing, this exploratory quantitative analysis reveals three important regularities. First, the rate of the reforms is reflected in different paths in job creation and job destruction: countries that 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 that 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 towards the end of 1990s. Second, insights from the literature confirm only some of the theoretical predictions: large and public firms were characterized by lower job creation, whereas smaller and private firms by larger job creation. Both characteristics resemble those from advanced market economies, see Davis and Haltiwanger (1996). Yet, important predictions of the optimal speed of transition

[12] Articles did not provide a consistent criterion to distinguish between large and small firms; authors tend to employ different, not always overlapping, cut-off values. Nonetheless, we define small firms as those with less than 50 employees. When the authors selected less than 100 employees as the smallest category, we consider that the estimates contained both small and large firms.

Table 3: Estimates of labor market flows: exploratory analysis

Variable	Job creation				Job destruction			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Studies reporting job flows							
Only public	9.95	-3.45***	-6.24***	-6.68***	10.32	-0.21	-0.73	-0.66
		(0.88)	(1.66)	(2.06)		(0.94)	(0.97)	(0.72)
Only manufacturing	13.22	-7.36***	-7.63***	-8.05***	10.04	2.34***	-0.57	-0.85
		(2.08)	(2.14)	(2.39)		(0.75)	(0.72)	(0.60)
Only large firms	9.63	-3.74***	-3.86**	-3.87**	10.44	0.21	-1.06	-1.29*
		(1.63)	(2.03)	(2.14)		(0.72)	(1.08)	(0.87)
Only small firms	6.18	11.96***	5.02	4.76	9.30	7.81***	4.25***	3.80***
		(4.04)	(4.23)	(4.56)		(1.62)	(1.49)	(1.34)
Fixed effects for country		No	No	Yes		No	No	Yes
Fixed effects for year		No	No	Yes		No	No	Yes
Fixed effects for article		No	Yes	Yes		No	Yes	Yes
# of observations	345	345	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	2.04	-10.0**	-28.7***	-28.7***	9.98	3.9*	-2.6	-2.6
		(5.8)	(9.5)	(9.8)		(2.6)	(3.6)	(2.5)
Only manufacturing	3.09	-6.4	-25.1***	-25.1***	10.56	4.5**	-2.0	-2.0
		(5.9)	(9.8)	(10.0)		(2.7)	(3.9)	(2.7)
Only large firms	4.28	-21.6***	-31.8***	-31.8***	9.40	10.8	6.1	6.1
		(7.2)	(9.5)	(9.5)		(9.4)	(9.6)	(8.7)
Only small firms	24.02	-3.0	-13.2	-13.2	16.10	3.3	-1.4	-1.4
		(7.8)	(10.2)	(9.7)		(2.7)	(2.7)	(1.8)
Fixed effects for country		No	No	Yes		No	No	Yes
Fixed effects for year		No	No	Yes		No	No	Yes
Fixed effects for article		No	Yes	Yes		No	Yes	Yes
# of observations	85	85	85	85	85	85	85	85
R^2		0.102	0.264	0.291		0.127	0.315	0.642

Notes: Average flows reported in columns (1) and (5). Average job creation computed at worker level amounts to 24.51, and 8.73 at firm level (with a $t-statistic$ of the equality test -6.00). OLS estimation in columns (2)-(4) and (6)-(8). Bootstrapped standard errors with 1000 repetitions presented in parentheses. ***,**,* indicate significance at the 5%, 10% and 15% level respectively. For job destruction the respective numbers are 21.96 and 10.27, with a $t-statistic$ of -11.61. Results for gross flows, net flows and excess flows available in Table B.1 in the Appendix.

theory are not fully confirmed. Namely, data suggest that public and private firms had similar destruction rates. All transition economies analyzed in this survey gradually converge towards job creation and destruction rates between 5% and 7%. Plausibly, 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 explore the link between job flows, on the one hand, and productivity and income inequality, on the other.

The estimates from Table 3 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 estimates of job flows provided in the literature. Second, we also use the residuals from the regressions portrayed in Table 3. 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.[13] These residuals convey the dispersion cleaned of the effects associated with the source of the data and the types of units covered.

5 The links to productivity and income inequality

Our objective in this paper is to analyze whether more churning during massive labor reallocation translates to higher productivity growth and whether it happens at the expense of higher income inequality. To this end, we present two types of evidence. First, we estimate contemporaneous correlations between alternative measures of job reallocation on the one hand and labor productivity growth and the Gini index, on the other. We refer to these measures as short-term correlations. Second, we inquire about the long-term relationship between the variables of interest. Data on labor productivity growth come from the Conference Board, whereas data on income inequality were obtained from World Income Inequality Database, see Appendix C for details.

The analysis on the estimates from the literature is complemented with data from *Life in Transition Survey* (henceforth, LiTS) - a recent alternative source collected by the European Bank for Reconstruction and Development. This is a retrospective study administered in 2006 in 29 transition economies. Detailed data on employment history were collected, thus permitting computation of worker flows for a large sample of transition economies. We present the comparison between the estimates from the literature and the rates computed on data from LiTS in Appendix D.

5.1 Short-term correlations

In Table 4, we present the short-term correlation 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 out that, theoretically, both job destruction and job creation should matter contemporaneously for the changes in productivity and inequality. Periods of 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 to job creation. Also the relationship between job flows and inequality need not be causal. During periods of recessions, income inequality is likely to increase.[14] The opposite holds for the upturns of the business cycle.

Another important factor concerns the sample composition. As evident from Table 2 we have data on both worker and job flows for only a small number of countries. This the case of Estonia, Poland and Russia, although sometimes periods differ. In the case of Czech Republic, the literature provides only estimates for gross worker flows, whereas in the remaining six countries,

[13] Unlike Table 3 the residuals come from a regression without a constant.

[14] See Burkhauser et al. (1999), Barlevy and Tsiddon (2006), Hoover et al. (2009) for a detailed treatment.

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/or due to country specificity in the sample composition. To address this point, we also provide estimates based on LiTS data, which are conceptually comparable to gross worker flows.

In Table 4, we provide a variety of specifications to account for the different measures of flows. First, in columns (1) to (3), we include the estimates for the raw values from the literature, separating the estimates for the gross worker flows and net job flows. However, these estimates can be excessively noisy due to the variation coming from the type of flows analyzed in the literature (e.g. only public sector or only manufacturing). Given that these distinctions might affect our result, as demonstrated by Table 3, we control for them following a two-step procedure: we regress our dependent variables of interest on 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 second set of specifications, the explanatory variable is a residual from a specification that 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, we provide conceptually comparable estimations where the measures of flows come from LiTS. 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. While the estimates are consistently negative, they lose significance in the case of the indicators for the worker flows. Since the lack of significance may come from the lower power due to lower number of observations, we turn to the estimates based on LiTS data for confirmation. In fact, comparable estimates from LiTS are also insignificant for the countries and years analyzed in the literature, so the lack of significance is not a consequence of insufficient power. However, for a longer time span as well as a wider selection of transition economies the link to productivity is negative and significant – column (10) of Table 4. This result suggests that quantitatively the recession explanation dominates the Schumpeterian explanation, with a substantial country level heterogeneity. For job creation, the correlations with productivity are insignificant in the literature. However, when we rely on LiTS data, even for the same countries as in the literature, the results become significant and positive – columns (8) to (10) in Table 4. This positive correlation – even if not very robust – further strengthens the interpretation that business cycle is the mitigating factor in between job creation and productivity growth in the transition economies.

For both job creation and job destruction we come to the mechanical explanation dominating the Schumpeterian notion of reallocation due to creative destruction.[15] While contemporaneous correlations may be insufficient to demonstrate this link, we also try an alternative specification:

[15]The results for other measures of labor market flows – net reallocation, gross reallocation and excessive reallocation – are reported in Table E.1 in Appendix. By and large they confirm these patterns.

instead of labor productivity growth year on year we use the chain index. We treat the last decade before the transition as basis (compute an average over these 10 years) and relate subsequent levels of labor productivity to this basis. The results are reported in Table E.2 in the Appendix. The negative effect for the job destruction is fairly persistent, whereas the results for job creation are to a large extent driven by properties of the estimates, as they disappear once we control for study characteristics or include all countries and years.

Unlike labor productivity growth, the Gini index of income inequality displays a strong, robust and positive contemporaneous correlation with alternative measures of job flows. 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 a positive sign, which points to the low statistical power of estimates in column (3). 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 the relation between job creation and inequality, but the standard errors are twice as large 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 country hereogeneity. 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 4.

Table 4: Contemporaneous correlations of labor market flows with productivity and income inequality

		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 at time t									
Job creation	β	-0.003	-0.000	0.003	-0.008	0.003	0.535	0.734	1.179***	0.589*	1.436***
	SE	(0.006)	(0.004)	(0.009)	(0.020)	(0.006)	(0.696)	(0.515)	(0.507)	(0.376)	(0.327)
	N	430	85	345	430	430	19	40	50	71	240
	$R2$	0.782	0.953	0.752	0.000	0.782	0.041	0.055	0.116	0.039	0.082
Job destruction	β	-0.069***	-0.005	-0.113***	-0.196***	-0.050**	-0.217	-0.321	0.768	0.566	-0.921***
	SE	(0.018)	(0.028)	(0.038)	(0.057)	(0.026)	(0.549)	(0.502)	(0.599)	(0.458)	(0.233)
	N	430	85	345	430	430	19	40	50	71	240
	$R2$	0.788	0.953	0.759	0.028	0.784	0.011	0.012	0.039	0.024	0.068
		Gini index at time t									
Job creation	β	0.017***	0.0003	0.023***	0.006	-0.001	2.010***	1.392***	0.550*	0.817***	1.099***
	SE	(0.007)	(0.004)	(0.009)	(0.040)	(0.008)	(0.680)	(0.362)	(0.336)	(0.256)	(0.202)
	N	348	67	281	348	348	18	39	49	70	192
	$R2$	0.902	0.954	0.899	0.000	0.901	0.402	0.303	0.063	0.145	0.152
Job destruction	β	0.144***	0.019	0.254***	0.361***	0.151***	1.464***	0.747**	0.522	0.793***	0.456***
	SE	(0.021)	(0.027)	(0.032)	(0.107)	(0.030)	(0.667)	(0.427)	(0.388)	(0.321)	(0.181)
	N	348	67	281	348	348	18	39	49	70	192
	$R2$	0.915	0.954	0.921	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 only job (net) flows and in (3) we keep worker (gross) flows . In columns (4) and (5), our right hand side variables are the flows once the paper characteristics are taken into account, as in Table 3. 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, but use all the transition years (i.e. between 1989 and 2000). In (10) we present the results for all countries and years with available information from the LiTS. Bootstrapped standard errors with 1000 repetitions in parenthesis. ***,**,* indicate significance at the 5%, 10% and 15% level. Results for gross, net and excess reallocation reported in Appendix E.

The positive correlations between both measures of job flows and income inequality seem to be a fairly universal phenomenon. Such results are indicative of two types of mechanisms: (i) low – perhaps even insufficient – generosity of the social safety nets in transition countries; (ii) more dispersed income structures in newly created jobs. Possibly, relative to the "old" jobs, the newly created ones offered either substantially worse or substantially better working conditions in terms of remuneration, wage arrears, etc. A weak and negative correlation between job destruction and labor productivity growth suggest that the recessionary mechanism was stronger than the Schumpeterian "creative destruction" during the process of worker reallocation between jobs. However, these contemporaneous correlations fail to describe causal relationships. In the next section we seek to establish long-term effects of labor market flows on aggregate indicators such as labor productivity and inequality.

5.2 The long-run effects

Given data constraints, providing trend estimations is not feasible. Nonetheless, we can relate the measures of labor market flows during the transition to subsequent changes in productivity and inequality. One possible approach is to rely on a lagged dependent variable model, but this is only possible at the expense of losing observations from early years of transition, as well as from some countries. Hence, we follow an alternative approach: we provide estimates for the lead observations of productivity growth and inequality (dependent variable) rather than lags of the flows (independent variable). The detailed estimates are reported in Table F.1 in the Appendix, whereas below we present the point estimates with the confidence intervals.

In the reminder of this section we compare the estimates for two samples. We consider the mean estimate for either job destruction or job creation from the literature for each country and year pair.[16] To avoid confusion of the estimates for job flows and worker flows in the literature, we only use the figures for the job flows. As analogous from LiTS, we take the indicators of hirings and separations for the same countries and years. Thus, the literature and LiTS differ only by the nature of the flows: job or worker.

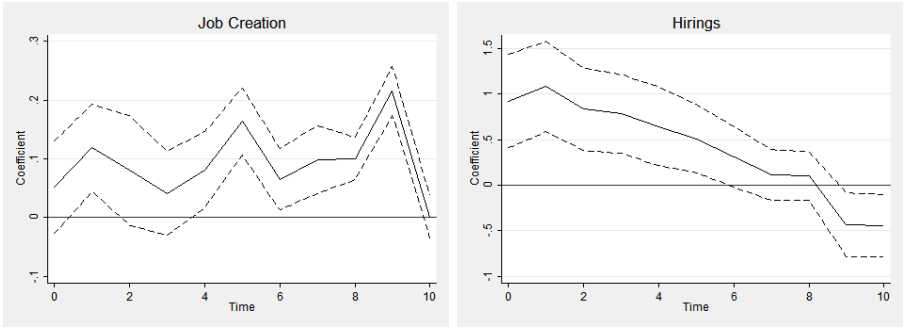
Figure 1 displays the estimates of correlations for job creations (literature) or hirings (LiTS) and consecutive values of the labor productivity growth, with the year on the horizontal axis denoting the number of years between a given flow and a labor productivity number in a regression. In total, these are the results from 10 separate regressions, each of 67 observations. In Figure 2 we do the same for the job destructions (literature) or separations (LiTS).[17] These estimates confirm the lack of clear significant pattern between the job creation in the literature and the rate of labor productivity growth. While these partial correlations are not precisely estimated, they remain around zero regardless of the time distance between the measured job flow and the productivity growth. Similarly, the positive link between productivity and hirings obtained from the LiTS data proves to be consistent and lasting.

The trends described above – the lack of a clear link between job flows and productivity and the positive relation between worker flows and productivity – might seem contradictory;

[16] These values are reported in Table A.2 in the Appendix.

[17] The alternative specifications tested included median rather than mean estimate for a given country in a given year as well as the use the number of estimates for country-year pair as weights. The results remain unaffected.

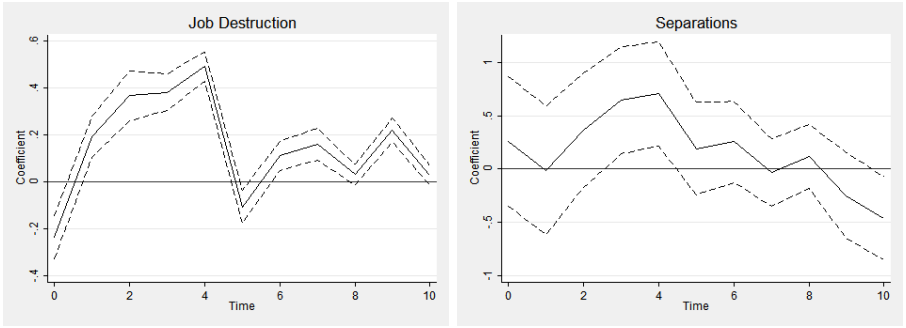
Figure 1: Productivity growth and job creation / hirings



(a) literature (b) LiTS, same countries and years

Note: Estimates from a regression of subsequent leads for productivity growth on the available estimates of job creation and hirings, leads reported on the horizontal axis, detailed results reported in Table F.1.

Figure 2: Productivity growth and job destruction / separations



(a) literature (b) LiTS, same countries, same years

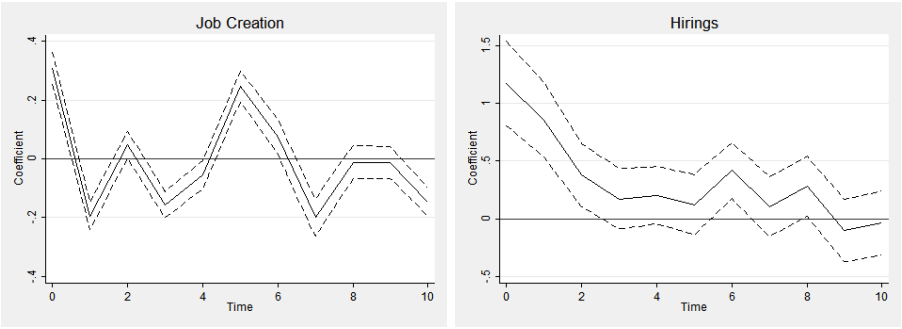
Note: Estimates from a regression of subsequent leads for productivity growth on the available estimates of job destruction and separations, leads reported on the horizontal axis, detailed results reported in Table F.1.

however, one potential explanation is that the majority of worker flows were not associated with 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 requires a change in the composition of skills. While net change in employment remains 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' needs. A similar process may describe the situation when an existing company needs to develop a back office (e.g. marketing, logistics, etc.), but automatizes or outsources part of production, downsizing core employment.

The analysis of the long-term relationship between job destruction or separations and pro-

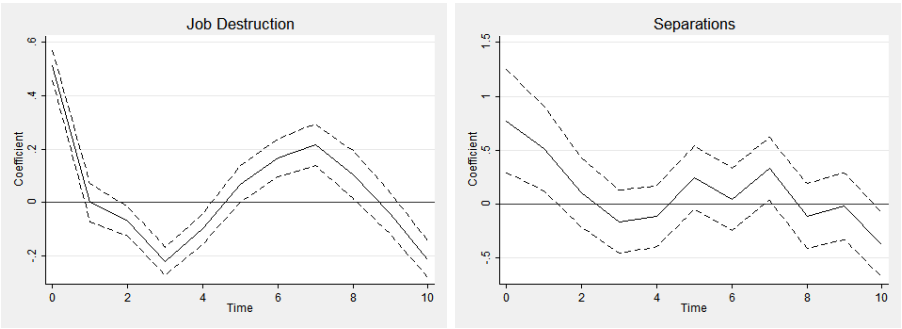
ductivity growth partially confirms this intuition. Job destruction rate remained strongly and positively related to the future labor productivity growth for as long as about five years. Yet, mostly redundancies bring about this effect, because separations *per se* remain unrelated to any future rate of labor productivity growth. This may be interpreted as evidence for the statement that while restructuring could have been crucial (due to overmanning under the centrally planned system), higher worker churning does not bring about efficiency gains

Figure 3: Inequality and job creation / hirings



(a) literature (b) LiTS, same countries and years

Figure 4: Inequality and job destruction / separations

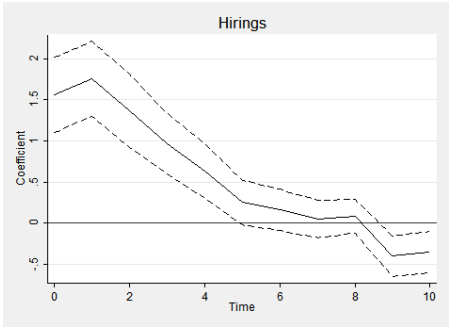


(a) literature (b) LiTS, same countries and years

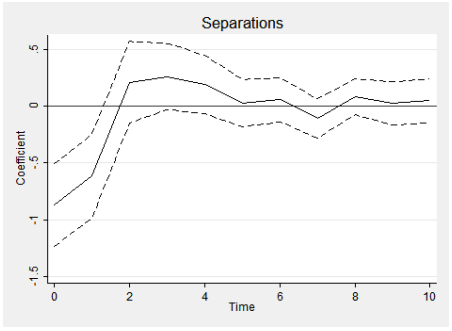
As for the income inequality, the results of Table 4 were indicative of either of the two possible explanations: (i) insufficient safety nets and (ii) higher wage dispersion in newly created jobs. We seek to distinguish between these two explanations by repeating the exercise for the leads of the Gini coefficient. This is done in Figures 3 and 4 for job creation/hirings and job destruction/separations, respectively.[18] The positive correlations between inequality and worker flows seem to be rather short-term. By contrast, the impulse from job flows tend to re-emerge in subsequent years. Moreover, in both the job flows and the worker flows, the estimated coefficients are positive for creation and destruction alike. Given the relatively persistently high

[18] Table C.1 discusses the availability of data sources for the indicators of inequality in 2000s, whereas in Table E.3 we show the results for the alternative indicators. Despite issues with data availability, the results remain robust to the data source.

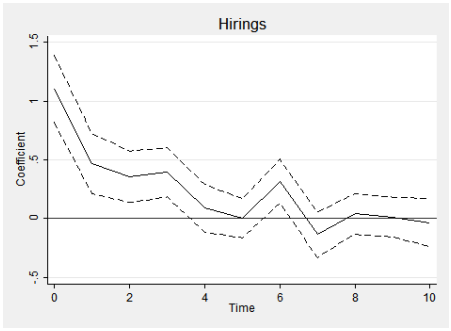
Figure 5: All countries and all years, LiTS



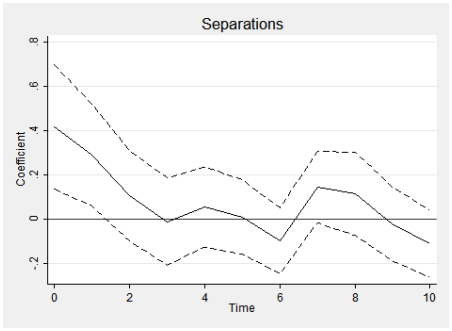
(a) Hiring and productivity growth



(b) Separations and productivity growth



(c) Hirings and inequality



(d) Separations and inequality

unemployment rates in many of the transition economies as well as the high share of long-term unemployment, we interpret these results are related to the working conditions more than to the weak safety nets.

An important question is whether these results reflect general trends or are dependent on country and period selection. In order to provide an answer, we compute analogous estimates using all countries and years from LiTS. As revealed by Figures 5a-5b when we consider all transition countries over the entire decade of 1990s, the business cycle effects still quantitatively dominate and high churning brings no productivity gain in total. Hirings have a lasting positive effect on future productivity, whereas the separations exhibit negative correlation in the short-run. Similarly, the finding concerning income inequality seems to be universal – relatively short-term strongly positive effects of worker flows on inequality are revealed by the data, see Figures 5c and 5d

The clear pattern for inequality and the 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 job destructions and creations within the contracting public sector. Thus, if new positions exhibit more wage dispersion – e.g. due to skill biased technological change – one should observe higher income inequality even if job flows are synchronized. 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, see Fox (1997). Such policies naturally mitigate the effect separations and job destructions on income inequality if pension benefits are more generous than the unemployment benefits. Also, such policies break the long-term link between job flows and inequality.

6 Conclusions

This paper aimed to test empirically if massive and rapid labor reallocation exhibits a link with productivity growth and income inequality. Such a causal link has been postulated by economic theory and is appealing as it is fairly intuitive. Moreover, the implications of such link are of general interest, as periods of intensive labor reallocation occur regularly in advanced and emerging economies alike. While the policy relevance of this question remains high, typically contemporaneous data that can be used to address this problem is scarce.

We use the insights from rich, although 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 "losers" (i.e. inequality). 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, they also witnessed a surge in income inequality. Admittedly, productivity growth becomes faster and inequality growth becomes slower with the time from the onset of the transition.

The exploratory analysis of over 450 estimates provided by the earlier studies reveals some interesting and still policy relevant patterns. First, against the conventional wisdom, large firms and public firms (typically state-owned or formerly state-owned) were characterized by net job destruction rates similar to small firms and private firms. It is rather the lower job creation rate in the public sector that differentiates the two. Similar phenomena were described by Cahuc and Zylberberg (2009) in their analysis of sunrising and sunsetting branches of the French economy, with relevant policy implications. Our results lend the support to these conclusions in the context of a massive labor reallocation rather than gradual structural adjustment. Moreover, this channel of adjustment seems to be particularly relevant for massive reallocations, because neither the estimates from the literature nor the cross-validation from LiTS data confirm the strong link between job flows and labor productivity growth. In fact, we find little support to the claim that job creation and productivity exhibit any long-run relationship. In the short-run, the link between productivity and reallocation is weak and mostly driven by job destructions. This relation seems to be closer to the standard mechanics of the recessionary pressure than to the Schumpeterian notion of creative destruction.

On the other hand, the link between job flows and inequality is strong, positive and robust to the country and period selection. Yet, it is rather a short-term phenomenon, which points to the relevance of wage dispersion in the process of massive labor reallocation. While we do not analyze social safety nets explicitly, the revealed patterns concerning inequality suggest that social safety nets – especially income support for elderly permanent labor market quitters –

helped to mitigate the perils of transition. Indeed, the long run effects are small. The direct effects of massive labor reallocation on the wage dispersion with the special emphasis on the newly created jobs remain to be explicitly analyzed in the future studies.

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Online appendices

A Summary of the available estimates

Table A.1: 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		29		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	59	22	105	12	42	33	454

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

Table A.2: 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 bootstrapping, with 1000 repetitions each.

B Exploratory analysis – additional specifications

Table B.1: Additional indicators of labor market flows: quantitative analysis

Gross reallocation	Worker flows			Job flows		
Only public	-6.07	-31.24***	-31.24***	-3.67***	-6.97***	-7.34***
	(6.94)	(9.99)	(10.11)	(1.22)	(2.03)	(2.12)
Only manufacturing	-1.92	-27.09***	-27.09***	-5.02***	-8.21***	-8.90***
	(7.34)	(10.94)	(10.39)	(2.18)	(2.25)	(2.38)
Only large firms	-10.82	-25.66***	-25.66***	-3.54***	-4.92***	-5.16***
	(12.34)	(13.03)	(12.21)	(1.75)	(2.17)	(2.34)
Only small firms	0.26	-14.57*	-14.57	19.76***	9.26***	8.56**
	(8.92)	(10.11)	(10.23)	(4.41)	(4.41)	(4.87)
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
hline Observations	85	85	85	345	345	345
R-squared	0.05	0.32	0.44	0.24	0.35	0.40

Net reallocation	Worker Flows			Job Flows		
Only public	-13.91***	-26.09***	-26.09***	-3.24***	-5.52***	-6.01***
	(5.36)	(10.10)	(10.56)	(1.30)	(2.01)	(2.44)
Only manufacturing	-10.85***	-23.03***	-23.03***	-9.70***	-7.06***	-7.20***
	(5.45)	(9.86)	(11.24)	(2.33)	(2.26)	(2.20)
Only large firms	-32.43***	-37.93***	-37.93***	-3.95***	-2.80	-2.58
	(11.20)	(13.40)	(14.42)	(1.79)	(2.66)	(2.66)
Only small firms	-6.34	-11.85	-11.85	4.15	0.77	0.96
	(7.58)	(10.21)	(11.05)	(4.25)	(4.61)	(4.32)
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
Observations	85	85	85	345	345	345
R-squared	0.17	0.22	0.23	0.11	0.17	0.19

Excess reallocation	Worker flows			Job flows		
Only public	0.97	-11.51***	-11.51***	-3.00***	-3.91***	-4.09***
0)	(3.75)	(3.37)	(0.61)	(0.85)	(0.95)	
Only manufacturing	8.18**	-4.30	-4.30	-0.88	-2.45***	-2.66***
	(4.20)	(6.13)	(3.65)	(0.82)	(1.08)	(1.06)
Only large firms	-10.28***	-17.76***	-17.76***	0.49	-1.64*	-1.72*
	(3.44)	(3.49)	(3.68)	(0.81)	(1.03)	(1.11)
Only small firms	9.35***	1.86	1.86	11.86***	7.64***	7.36***
	(4.50)	(4.54)	(3.37)	(1.91)	(1.77)	(1.69)
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
Observations	85	85	85	345	345	345
R-squared	0.17	0.43	0.69	0.34	0.55	0.62

Notes: The table extends the results from Table 3 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.

C Sources of data for productivity and inequality

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. 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. Thus, we rely on productivity per worker instead of per hour. 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 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 C.1. The patterns described at length in earlier studies exhibit 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.

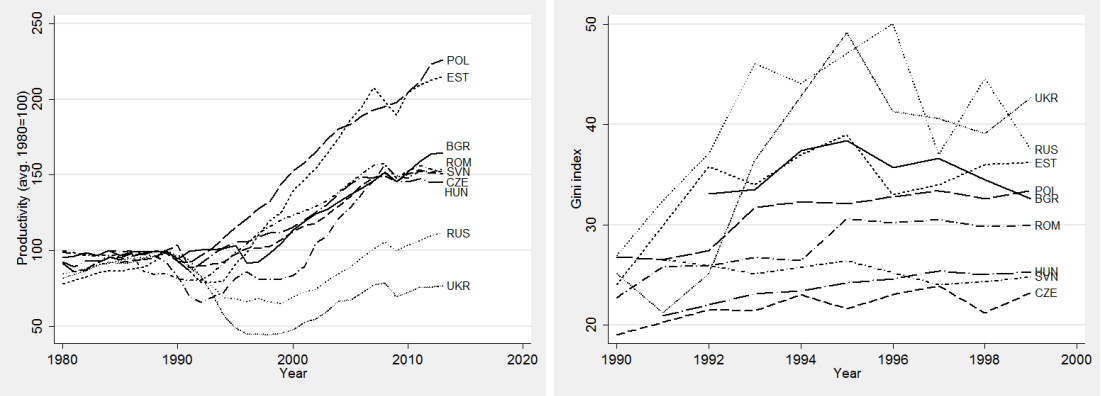

Figure C.1: Productivity chain index (left) and Gini inequality index (right)

In the case of income inequality, data were extracted from the World Income Inequality 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. Datasets vary on the unit of analysis (individual, household), the units of measurement (gross or net income, consumption) as well as indicators (e.g. Gini coefficient, Theil coefficient, percentiles ratios, etc). We report in detail the sources in Table C.1. 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

inequality. 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 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 Transmonee data 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 refer to inequality in disposable income measured at household level.

For most transition economies analyzed in the literature, inequality 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, Bulgaria and Poland experienced an initial stark increase in income inequality, which peaked in mid-1990s and stabilized or even decreased since. Romania also experienced an increase around that period, but maintained a high level of inequality 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.

Table C.1: 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 E.3

D A comparison with the alternative data sources

A nagging question in any quantitative analysis of the literature corresponds to the reliability of the estimates, all the more since authors employed different sources while 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 retrospective survey conducted in all former socialist countries, see EBRD (2006), Sanfey and Teksoz (2006). LiTS rely on worker self-reported information on consecutive jobs held, i.e. it allows to compute hirings and separations rather than job creation and job destruction. As reporeted already in Table 3, it is the latter that are more frequently reported in the literature. In order to allow wider country and period coverage, we compare the estimates from LiTS to estimates from the literature for job creation and job destruction, i.e. 53 country-year observations.[19]. When more than one estimate per country-year is available, we take the mean of them as the reference point. The choice of the mean as a reference point has little impact on conclusions – we have tested the specification for median of the available estimates as well as fitted values from Table 3. The results are reported in in Figure D.1 and in Table D.1.

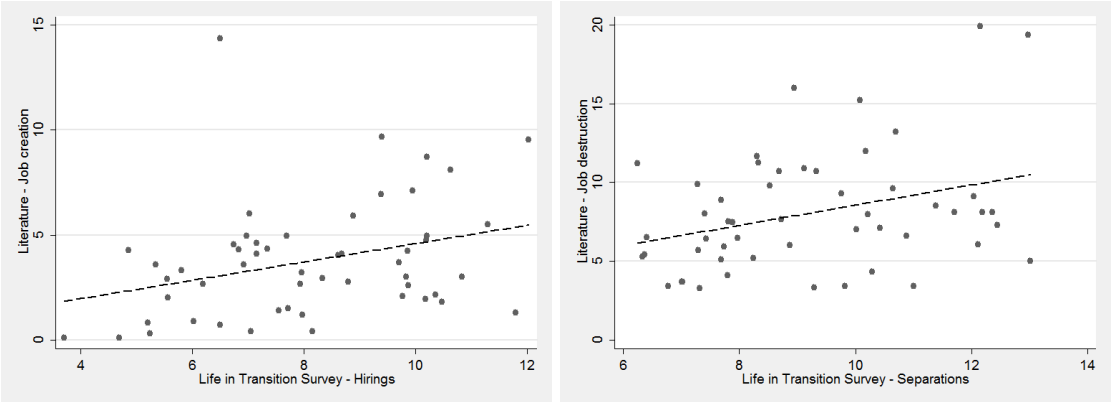

Figure D.1: Correlations between the estimates from the literature and the LiTS data.

In most cases, worker level flows are larger than firm level flows, which confirms the results from Table 3, with a few notable outliers.[20] To test the significance of the linear relation displayed in Figure D.1 we provide an additional series of tests: a pairwise 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. All coefficients are positive, whereas worker flows are larger than job flows. With loosing the degrees of freedom due to higher number of explanatory variables, only one coefficient looses significance. 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.

[19]The estimates for the 12 data points for countries and years where the literature reports hirings and firings are available upon request.

[20]For example, Estonia in 1991 had job destructions close to 16 % of the workforce (more than two standard deviations away from the mean in the sample).

Table D.1: 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***	3.553	0.328***	2.456
OLS - no controls	0.524***	3.553	0.641***	2.456
OLS - country dummies	0.345***	3.196	0.580**	1.829
OLS - year dummies	0.443***	2.330	0.765***	2.629
OLS - country and year dummies	0.226	1.461	1.057 ***	2.972

Notes: 53 country-year data points. 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 bootstrapping 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

E Additional specifications for Table 4

Table E.1: Relation between productivity and inequality 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	-0.01**	-0.01	-0.00	-0.03**	-0.00	0.06	0.17	0.94***	0.52**	-0.16
	SE	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)	(0.41)	(0.35)	(0.36)	(0.27)	(0.22)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.78	0.75	0.95	0.01	0.78	0.00	0.01	0.14	0.06	0.00
Net reallocation	β	0.01*	0.01*	0.00	0.01	0.01	-0.62	-0.50	-0.61	-0.32	-1.06***
	SE	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)	(0.57)	(0.57)	(0.62)	(0.45)	(0.22)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.78	0.75	0.95	0.00	0.78	0.08	0.02	0.02	0.01	0.10
Excess reallocation	β	-0.01	0.03*	0.02	-0.03	0.03**	0.24	0.25	0.90***	0.48***	0.71***
	SE	(0.01)	(0.02)	(0.02)	(0.04)	(0.02)	(0.33)	(0.29)	(0.31)	(0.23)	(0.20)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.78	0.75	0.95	0.00	0.78	0.04	0.02	0.17	0.06	0.06
		Inequalities (Gini)									
Gross reallocation	β	0.03***	0.05***	0.00	0.04	0.01*	1.24***	0.89***	0.52***	0.73***	0.77***
	SE	(0.01)	(0.01)	(0.00)	(0.04)	(0.01)	(0.36)	(0.24)	(0.24)	(0.18)	(0.13)
	N	348	281	67	348	348	18	39	49	70	192
	R^2	0.90	0.90	0.95	0.01	0.90	0.48	0.29	0.10	0.21	0.17
Net reallocation	β	-0.01	-0.00	-0.00	-0.02	-0.01	-0.14	-0.05	-0.17	-0.29	-0.13
	SE	(0.01)	(0.01)	(0.01)	(0.03)	(0.01)	(1.25)	(0.58)	(0.41)	(0.33)	(0.18)
	N	348	281	67	348	348	18	39	49	70	192
	R^2	0.90	0.90	0.95	0.00	0.90	0.00	0.00	0.00	0.01	0.00
Excess reallocation	β	0.03***	0.09***	-0.01	0.10**	0.03*	0.90***	0.64***	0.43***	0.62***	0.67***
	SE	(0.01)	(0.02)	(0.01)	(0.06)	(0.02)	(0.34)	(0.21)	(0.21)	(0.16)	(0.12)
	N	348	281	67	348	348	18	39	49	70	192
	R^2	0.90	0.90	0.95	0.01	0.90	0.35	0.21	0.10	0.21	0.16

Notes: Table extends the results from Table 4 (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 4

Table E.2: 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	-0.04***	-0.05***	-0.00	-0.06*	-0.01	-3.09***	0.65	1.42	0.62	-0.63
	SE	(0.02)	(0.02)	(0.01)	(0.04)	(0.01)	(0.99)	(1.27)	(1.07)	(0.89)	(0.51)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.82	0.81	0.97	0.00	0.81	0.41	0.01	0.04	0.01	0.01
Job Destruction	β	-0.36***	-0.67***	-0.01	-0.59***	-0.30***	-0.74	-0.94	0.26	-0.20	-1.18***
	SE	(0.07)	(0.11)	(0.04)	(0.15)	(0.09)	(0.99)	(1.21)	(1.24)	(1.09)	(0.35)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.83	0.83	0.97	0.03	0.82	0.04	0.02	0.00	0.00	0.05
Gross reallocation	β	-0.08***	-0.11***	-0.00	-0.12***	-0.04***	-1.41***	-0.17	0.85	0.26	-1.20***
	SE	(0.02)	(0.03)	(0.01)	(0.04)	(0.02)	(0.64)	(0.84)	(0.78)	(0.66)	(0.31)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.81	0.81	0.97	0.01	0.82	0.26	0.00	0.03	0.00	0.06
Net reallocation	β	0.02	0.02	-0.00	0.02	0.02	0.43	-0.62	-1.15	-0.64	-0.71***
	SE	(0.01)	(0.02)	(0.01)	(0.04)	(0.02)	(1.08)	(1.38)	(1.27)	(1.06)	(0.34)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.81	0.81	0.97	0.00	0.81	0.01	0.01	0.02	0.01	0.02
Excess reallocation	β	-0.08***	-0.15***	0.02	-0.36***	-0.15***	-1.13**	0.04	1.00	0.38	-0.51**
	SE	(0.03)	(0.06)	(0.02)	(0.11)	(0.06)	(0.54)	(0.71)	(0.68)	(0.57)	(0.30)
	N	430	345	85	430	430	19	40	50	71	240
	R^2	0.82	0.81	0.97	0.02	0.82	0.24	0.00	0.05	0.01	0.01

Notes: Table repeats specifications from Table 4 (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 4

Table E.3: Sensitivity analysis: different data sources on inequality – additional specifications for Table 4

Gini index		Literature			Literature (+controls)		Life in Transition Survey				
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		Transmonee									
JC	β	0.01***	0.01***	-0.00	0.00	0.00	3.95	1.54***	1.48***	0.73*	0.47*
	SE	(0.00)	(0.00)	(0.02)	(0.07)	(0.01)	(2.84)	(0.69)	(0.56)	(0.47)	(0.31)
	N	231	204	27	227	227	10	26	39	53	92
	R^2	0.97	0.97	0.99	0.00	0.97	0.26	0.13	0.19	0.06	0.03
JD	β	0.03***	0.05***	-0.01	0.15	-0.01	-1.50	-0.04	0.87*	0.13	0.46**
	SE	(0.01)	(0.02)	(0.01)	(0.19)	(0.01)	(2.80)	(0.97)	(0.54)	(0.46)	(0.25)
	N	231	204	27	227	227	10	26	39	53	92
	R^2	0.97	0.97	0.99	0.01	0.97	0.04	0.00	0.07	0.00	0.03
		WDI									
JC	β	0.00	0.00	-0.53	-0.01	0.00	3.78	1.92***	1.04	1.20	-0.17
	SE	(0.00)	(0.00)	(0.00)	(0.09)	(0.00)	(3.85)	(0.97)	(1.20)	(0.91)	(0.50)
	N	95	91	4	98	95	4	10	12	15	37
	R^2	0.99	0.99	1.00	0.00	0.99	0.80	0.45	0.07	0.13	0.00
JD	β	-0.00	0.01	2.40	0.10	-0.01**	0.84	-0.24	-0.22	-0.35	0.04
	SE	(0.01)	(0.01)	(0.00)	(0.26)	(0.01)	(78.38)	(1.13)	(1.07)	(0.75)	(0.26)
	N	95	91	4	98	95	4	10	12	15	37
	R^2	0.99	0.99	1.00	0.00	0.99	0.08	0.01	0.01	0.01	0.00

Notes: Table repeats specifications from Table 4 (in the main text) to different subsamples of countries, based on the available information on inequality 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 C.1. For more information on the specifications, refer to the notes on Table 4

F Long-run tendencies

Table F.1: The long-term relationship between job flows and indicators of interest

	From the literature					From LiTS				
Lag no.	JC	JD	Gross	Net	Excess	Hir.	Sep.	Gross	Net	Excess
	Productivity									
0	0.05	-0.25**	-0.06	0.17**	0.27	1.09***	0.12	0.60**	-0.74	0.65***
	(0.12)	(0.14)	(0.08)	(0.10)	(0.19)	(0.44)	(0.50)	(0.32)	(0.51)	(0.27)
1	0.11	0.20	0.12*	-0.02	0.42***	1.22***	-0.04	0.59**	-0.68	0.63***
	(0.12)	(0.14)	(0.08)	(0.10)	(0.17)	(0.41)	(0.47)	(0.30)	(0.48)	(0.25)
2	0.07	0.37***	0.16*	-0.15	0.17	0.81**	0.35	0.56**	0.03	0.40*
	(0.15)	(0.16)	(0.10)	(0.13)	(0.22)	(0.41)	(0.45)	(0.29)	(0.47)	(0.25)
3	0.04	0.42***	0.16***	-0.20***	0.16	0.37	0.35	0.34	-0.36	0.35**
	(0.11)	(0.12)	(0.08)	(0.09)	(0.17)	(0.34)	(0.37)	(0.24)	(0.39)	(0.20)
4	0.08	0.50***	0.21***	-0.21***	0.46***	0.18	0.37	0.26	0.43	0.06
	(0.10)	(0.10)	(0.06)	(0.08)	(0.14)	(0.31)	(0.33)	(0.22)	(0.35)	(0.19)
5	0.17**	-0.09	0.05	0.17***	0.04	0.32	-0.16	0.09	0.09	0.04
	(0.09)	(0.11)	(0.06)	(0.08)	(0.14)	(0.30)	(0.33)	(0.22)	(0.35)	(0.19)
6	0.07	0.10	0.07	0.00	-0.12	0.14	0.13	0.13	-0.10	0.12
	(0.08)	(0.10)	(0.06)	(0.07)	(0.13)	(0.29)	(0.31)	(0.21)	(0.33)	(0.18)
7	0.10	0.15	0.10*	-0.00	0.18	0.04	-0.06	-0.01	0.11	-0.04
	(0.09)	(0.11)	(0.06)	(0.08)	(0.14)	(0.25)	(0.26)	(0.17)	(0.28)	(0.15)
8	0.10**	0.02	0.06	0.07	-0.08	0.30*	0.19	0.23**	0.05	0.16
	(0.06)	(0.07)	(0.04)	(0.05)	(0.09)	(0.18)	(0.20)	(0.13)	(0.21)	(0.11)
9	0.22***	0.20***	0.17***	0.06	0.06	0.17	0.02	0.09	-0.09	0.09
	(0.07)	(0.08)	(0.05)	(0.06)	(0.11)	(0.22)	(0.24)	(0.16)	(0.25)	(0.13)
10	0.00	0.04	0.02	-0.02	-0.07	-0.35	-0.45*	-0.37**	-0.17	-0.22
	(0.06)	(0.07)	(0.04)	(0.05)	(0.09)	(0.27)	(0.29)	(0.19)	(0.31)	(0.16)
	Inequalities									
0	0.31***	0.51***	0.32***	-0.04	0.54***	1.03***	0.79***	0.82***	-0.21	0.63***
	(0.09)	(0.09)	(0.05)	(0.09)	(0.14)	(0.32)	(0.38)	(0.22)	(0.45)	(0.19)
1	-0.19***	0.03	-0.09*	-0.20***	-0.19*	0.53***	0.15	0.36**	-0.47**	0.40***
	(0.08)	(0.11)	(0.06)	(0.07)	(0.13)	(0.25)	(0.28)	(0.19)	(0.27)	(0.15)
2	0.05	-0.06	0.00	0.07	0.09	0.31	-0.16	0.08	-0.09	0.09
	(0.08)	(0.09)	(0.05)	(0.07)	(0.12)	(0.22)	(0.24)	(0.16)	(0.25)	(0.13)
3	-0.15***	-0.23***	-0.15***	0.01	-0.32***	0.15	-0.19	-0.01	-0.02	-0.00
	(0.07)	(0.08)	(0.05)	(0.06)	(0.11)	(0.23)	(0.24)	(0.16)	(0.26)	(0.14)
4	-0.05	-0.10	-0.06	0.01	-0.09	0.04	-0.19	-0.06	-0.06	-0.03
	(0.08)	(0.09)	(0.05)	(0.07)	(0.12)	(0.21)	(0.23)	(0.15)	(0.24)	(0.13)
5	0.25***	0.07	0.14***	0.15**	0.30***	0.24	0.12	0.17	-0.10	0.15
	(0.08)	(0.11)	(0.06)	(0.08)	(0.13)	(0.20)	(0.21)	(0.14)	(0.22)	(0.12)
6	0.08	0.15	0.09	-0.02	0.03	0.38**	-0.23	0.09	-0.47**	0.20*
	(0.09)	(0.11)	(0.06)	(0.08)	(0.15)	(0.22)	(0.24)	(0.16)	(0.25)	(0.14)
7	-0.20***	0.23**	-0.02	-0.26***	-0.26*	0.13	0.35*	0.22	-0.06	0.18
	(0.10)	(0.12)	(0.07)	(0.08)	(0.16)	(0.22)	(0.23)	(0.15)	(0.25)	(0.13)
8	-0.01	0.12	0.02	-0.05	-0.20	0.49***	-0.14	0.19	0.02	0.13
	(0.09)	(0.13)	(0.07)	(0.08)	(0.14)	(0.21)	(0.24)	(0.16)	(0.25)	(0.13)
9	-0.01	-0.04	-0.02	0.01	-0.09	-0.02	0.04	0.00	-0.07	0.02
	(0.08)	(0.12)	(0.06)	(0.08)	(0.13)	(0.23)	(0.24)	(0.16)	(0.26)	(0.14)
10	-0.14**	-0.23***	-0.13***	-0.02	-0.22**	0.03	-0.22	-0.08	-0.13	-0.02
	(0.07)	(0.10)	(0.05)	(0.07)	(0.12)	(0.22)	(0.24)	(0.16)	(0.25)	(0.14)

Notes: Panel on productivity shows the results from regressing leads of productivity growth on values of job flows obtained from the literature and from the LiTS. Each cell represents a different regression. The number of country-year pairs (observations) for the productivity estimates - 63. The results from this table were used in Figures 1-2. Panel on inequality shows the results from regressing leads of the Gini index on values of job flows obtained from the literature and from the LiTS. The number of country-year observations depends on available information at the country level and it varied from 54 to 67. The results from this table were used in Figures 3-4.