Discussion

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Scott Schuh and Robert Triest have written a useful and interesting paper, collecting existing evidence on job flows and providing us with a few brand new facts to chew on. I wish to touch on some of the many good things in the paper, but it comes with the discussant's job description that I must focus on the parts of the paper that I view as more problematic.

Few economists would deny that an ongoing process of factor reallocation is essential to the economic growth and prosperity of a market economy. The field is more divided on whether or not the churn (that is, the ongoing processes of creation and destruction) has a significant effect on the economy at *business cycle* frequencies. But even if we accept its relevance to the business cycle, it is a large leap to claim that reallocation shocks are a substantial *source* of business cycles, at least in the United States.

Perhaps constrained by the *shocks* theme of the conference, Schuh and Triest chose to emphasize this last, most debatable claim in many passages of their paper, including the introduction. I suspect this is a mistake at this stage, when we still have plenty to learn about the two less controversial claims, and the intermediate one in particular. Indeed, many of the recent developments in the reallocation literature relate to the intermediate claim, that is, that the job reallocation process is important for business cycle considerations. Moreover, most of the survey and "testing" part of the paper is not about models that are based on reallocation shocks, but about the response of the churn to changes in business cycle conditions. I share their eagerness to go beyond this stage

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and identify actual reallocation shocks; however, I also believe that with rare exceptions, which mostly do not apply to the modern United States, understanding the basic behavior of the reallocation process over the business cycle is a precondition to finding reliable "reallocation shocks."

Broadly, the paper has four ingredients: (i) A central supporting fact: "Job reallocation is strongly countercyclical; that is, job reallocation increases during recessions and decreases during expansions"; (ii) A central question: "Do reallocation and restructuring actually cause fluctuations?"; (iii) A brief taxonomy of theories of reallocation over the business cycle; and (iv) An organization of existing and new evidence. The latter has two main purposes: (a) to "test" the theories in (iii), and (b) to find traces of reallocation shocks.

I intend to focus my discussion on (i) and (ii), because I suspect that is where the interest of a broader audience lies, but I must say a few words about (iii) and (iv.a) before doing so. As for (iv.b), the evidence presented, as the authors acknowledge, is still quite preliminary and inconclusive. Among the new facts presented, however, I find the evidence in their section on relative prices quite interesting and potentially promising. Perhaps future versions of the paper, or follow-up papers, may reward us by focusing on this evidence more extensively.

Minor Quibbles

On Models of Reallocation

Under the heading "Theories Based on Aggregate Driving Forces," the authors discuss modern theories of reorganization over the business cycle. Their first group consists of "opportunity cost" stories, where recessions offer a chance to reorganize at low cost. The work of Hall (1991), Davis and Haltiwanger (1990), Cooper and Haltiwanger (1993) and Caballero and Hammour (1994, 1996, 1998) is all merged here. Although most of these theories are indeed opportunity cost-type stories, my work with Mohamad Hammour should not be included in this category. In our models, production units are "cleansed" not because recessions are times when it is relatively cheap to do so, but because it becomes privately too expensive to maintain the least (broadly defined) efficient units. This is an important conceptual difference. Moreover, one of the main messages of this line of research is that this cleansing is often *not* socially efficient. Rather than translating into useful and desirable reallocation, it often results in wasteful unemployment. This point hints at one of the issues I will raise later on: It seems odd to call a surge in destruction an increase in reallocation if it is not matched by a surge in creation. Yet the main measure of reallocation used in this paper does precisely that.

On Tests of Reallocation Models

One should never test a theory along dimensions the theory is not designed to explain.[1] The theories reviewed by Schuh and Triest are about job flows over the business cycle; they need an additional mechanism to generate an ongoing churn. It is a modeling tautology to argue that reallocation must move from worst to best units, once one considers all of the shadow values and rents faced by private agents. If the concern is not with the precise source of churn but with the cyclical behavior of job flows, then it seems perfectly fine to index the ranking of units by a catchall variable called productivity. But it seems less reasonable to accept or reject these theories on the basis of this reduced-form variable.

It does make sense, however, to explore what this reduced form variable is, in reality. Do agents respond to the right social shadow values? Are separations privately and/or socially efficient? Do spurious rents play an important role in the ranking of production units? Do rents and inefficiencies become worse during recessions? and so on. I suspect these are the questions the authors should be trying to address, and perhaps this section of the paper will eventually shed light on these important issues.

And it also makes sense to explore the relevance of the productivity dimension, as one of the ingredients determining the ranking of production units. In doing so, however, one needs to keep the following in mind: First, the productivity effects generated by "cleansing" models over the business cycle are an order of magnitude smaller than the fluctuations in productivity observed over the business cycle. As discussed in Caballero and Hammour (1994), labor hoarding and other traditional effects fully dominate cleansing mechanisms at high frequencies. Second, most of the evidence presented examines reallocation and productivity performance across sectors. In fact, cross-sectional comparisons require a multisector model as metric, and in such a model, even a purely neoclassical one, productivity is no longer a sufficient statistic. The correct variable to look at in this case is not productivity but revenue or profits. Recall Baumol's old explanation of factor reallocation from agriculture to manufacturing. If demands are sufficiently inelastic, then the sector with the *fastest* productivity growth will shed more labor in favor of lagging sectors. In equilibrium, relative price effects will dominate relative productivity effects. The same argument is used today to explain the ongoing reallocation from manufacturing to services.[2]

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[1] Unless, of course, that dimension is crucial for the functioning of the model, which is not the case here, as the discussion in the main text contends.

[2] Moreover, using cross-sectional data without controlling for a series of individual effects may not be entirely appropriate.

Is Reallocation Strongly Countercyclical?

The main supporting fact of the paper represents a widely held view: "Job reallocation is strongly countercyclical, that is, job reallocation increases during recessions and decreases during expansions."

I am not sure the fact is indeed a fact.

I am a great admirer of the Davis-Haltiwanger and Davis-Haltiwanger-Schuh work on job flows; they have created a literature on their own and have fed the imagination of theorists with great force. But I have always disagreed with using the words "job reallocation" to describe the sum of job creation and destruction.[3] As they have so thoroughly documented, and as many others seem to be replicating all over the world, manufacturing job destruction rises dramatically during recessions, while job creation declines much more moderately. The sum, therefore, rises during recessions.

But why should a surge in job destruction be called an increase in job reallocation? I suspect that part of the answer to this question lies in what I would describe as a "*dynamic fallacy of composition*." If an individual loses a job, his or her employment status can only be recovered by the creation of another job.[4] Thus at the *microeconomic* level, an act of destruction must yield an act of creation along a reemployment path. The fallacy lies in the extension of this logic to the aggregate economy. A surge in *aggregate* destruction may be offset by a compensating decline in destruction later on. Such a process would maintain the stationarity of employment with no change in the aggregate rate of job creation; many other combinations are possible (see below). This lack of connection between an initial surge in aggregate destruction and the path of aggregate creation is fully consistent with the tight connection between creation and destruction at the microeconomic level, where jobs lost by specific individuals are recovered through the normal churn process.

In a recent paper (Caballero and Hammour 1998) we have explored this issue in some detail. We use the expression "turbulence" to refer to situations where cumulative destruction is positive after a full recession-recovery episode.[5] The opposite phenomenon, where cumulative destruction turns negative as the recession-recovery cycle is completed, we describe as "chill."

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[3] Davis-Haltiwanger-Schuh define a measure they call "excess reallocation" as the difference between the sum of the flows and the absolute value of the net flow. This measure is less subject to my criticism below, but unfortunately the literature has chosen to focus more on the measure of job reallocation without the net correction.

[4] Leaving aside standard job reshuffling.

[5] Note that we could use cumulative creation instead of destruction, since they must be equal if employment is stationary. This is the case in post-1960s U.S. manufacturing.

In the least structural part of that paper, we estimate a fairly standard semi-structural VAR:

$$\begin{bmatrix} N \\ D \end{bmatrix} = A(L) \begin{bmatrix} \epsilon^a \\ \epsilon^r \end{bmatrix}$$

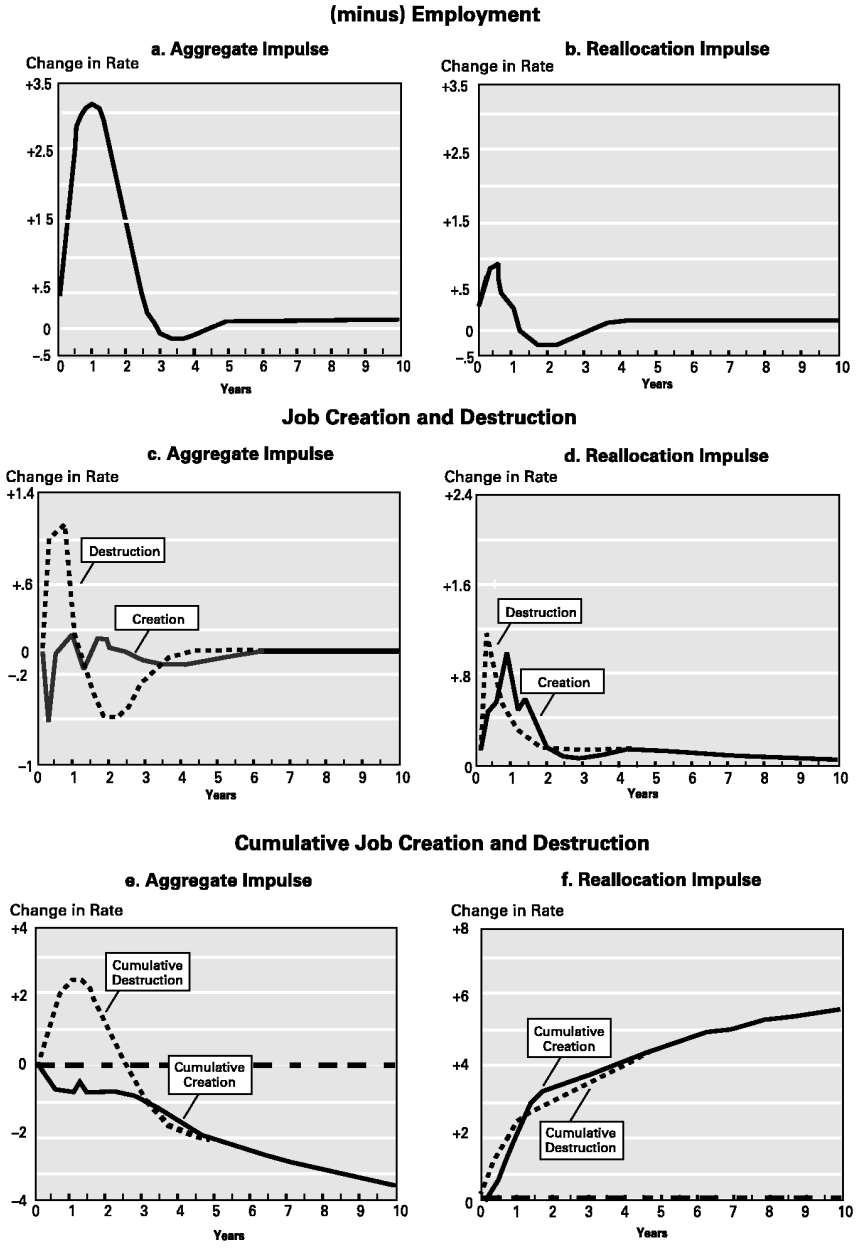
where $A(L) = A_0 + A_1L + A_2L + \ldots$, N and D are manufacturing employment and job destruction, respectively, and ϵ^a and ϵ^r represent i.i.d. innovations that correspond to aggregate and reallocation shocks, respectively. Besides normalizations, achieving identification requires two additional restrictions. For this purpose, we assumed that the two innovations are independent of each other, and that at impact a recessionary shock raises destruction and lowers creation. Based on Davis and Haltiwanger (1996), we set the relative size of the absolute response of destruction compared to creation to 1.6, which is roughly the value that maximizes the contribution of aggregate shocks to net employment fluctuations.

Figure 1 here reproduces Figure 5.3 in Caballero and Hammour (1998). The first column presents the impulse response to a recessionary shock that yields a cumulative effect on (minus) employment equivalent to the cumulative (economywide) unemployment generated during the 1974–75 recession.[6] The first two panels are rather familiar, and the bottom one contains our results on cumulative flows. After the familiar short-term turbulence, there is clear evidence of a chill. Bootstraps confirmed the statistical significance of this finding. It is this figure, together with a series of companion robustness experiments, that leads me to conjecture that the widespread view that job reallocation is countercyclical may be incorrect.

Why is this discussion of any interest to macroeconomists? Earlier in this century the "liquidationist" view of recessions had strong support. According to this argument, recessions are necessary to a healthy economy because they facilitate the reallocation of resources from least to most productive units. Although this view is much less prevalent today, I suspect that many see increased reallocation as the "silver lining" of recessions. I do not share this belief, at least for the United States. In the very short run, the observed turbulence is a mostly wasteful reallocation into unemployment or secondary jobs rather than into new opportunities. And after all is said and done, a recession-recovery cycle may yield *less* rather than *more* productivity-enhancing reallocation. In Caballero and Hammour (1998) we estimate that depressed cumulative reallocation may add as much as 30 to 40 percent to the "normal" unemployment costs of recessions.

[6] The impulse responses for job creation are obtained from the identity $\Delta N = H - D$.

Figure 1
Impulse Responses to a Recessionary Shock



Source: Caballero and Hammour 1998, Figure 5.3.

Do Reallocation Shocks Actually Cause Fluctuations?

In Eastern Europe and other economies experiencing deep transformation of their productive structures, the answer to this question must be a clear yes. In the United States, on the other hand, the answer is much less clear.

The second column in Figure 1 has one possible answer. It shows the impulse response of (minus) employment, job flows, and cumulative flows to a reallocation shock of the same size (in terms of own standard deviations) as the aggregate shock. A comparison of panels (a) and (b) reveals that the contribution of reallocation shocks to net employment fluctuations is substantially less than that of aggregate shocks. Note, however, that this is not the case for *gross* flows and their accumulation, where reallocation shocks play an important role.[7]

Nonetheless, it is certainly possible that reallocation shocks may indeed be important to certain episodes of aggregate employment change. The unusual nature of the most recent recession may have been the result of a shift in the pattern of reallocation. Figures 2a and 2b, which show the shocks decompositions of the VAR presented above, reflect fairly large (relative to aggregate) reallocation shocks around the recession-recovery years. This result is also consistent with the persistent excess destruction during this episode highlighted by Schuh and Triest in their paper.

But more fundamentally, what are these reallocation shocks? Changes in the degree of job protection, or a dramatic departure from existing relative prices or business practices, qualify and have played important roles in many countries. But in the United States these shocks seem small enough that they may well come from modeling errors. Figure 3 presents the results of running the same VAR as in Figure 1, but using artificial data generated by a model with reasonable labor and financial market frictions subject to aggregate shocks only, calibrated to match a series of labor market features of the U.S. economy. Despite the fact that the true model was hit only by aggregate shocks, the VAR identified reallocation shocks that are comparable in magnitude and effects on aggregate employment to those found in the data.[8] I believe

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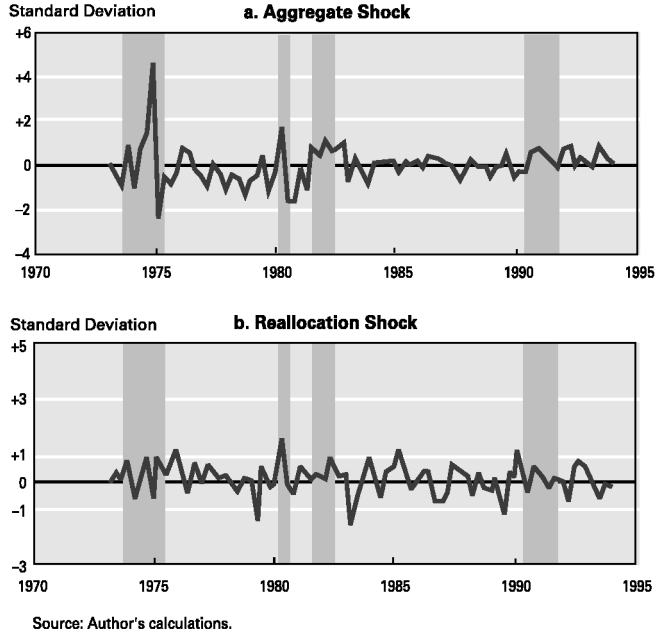
[7] As detailed above, the identifying assumption made in the VAR results presented here corresponds to that which maximizes the relative contribution of aggregate shocks to net employment fluctuations, according to the careful study in Davis and Haltiwanger (1990). Thus, a more accurate characterization of the comparison of the two columns in Figure 1 is that it is possible to generate a configuration of parameters such that reallocation shocks are not very important for aggregate employment fluctuations.

[8] This experiment generates the right shape in the response of gross flows and their accumulation, but not enough amplitude. This is consistent with the finding in Caballero, Engel, and Haltiwanger (1997) where, using detailed microeconomic data, we reached the

Figure 2
Shocks Decompositions of the Model



Source: Author's calculations.

almost any sensible model we write down will have enough nonlinearities, due to the natural asymmetry in both financial and labor market constraints, to "invent" reallocation shocks whenever the linear nature of VARs faces an intricate nonlinear response.

I wonder whether such a fragile decomposition is worth it. We may be better off sticking to shocks we can actually see, like oil prices, interest rates, liquidity, fiscal policy, capital flows, and so on.[9] All of these shocks will have "aggregate" and "reallocation" components, and exactly how they interact may be idiosyncratic enough that not much may be learned from pseudo-canonical decompositions and labels.

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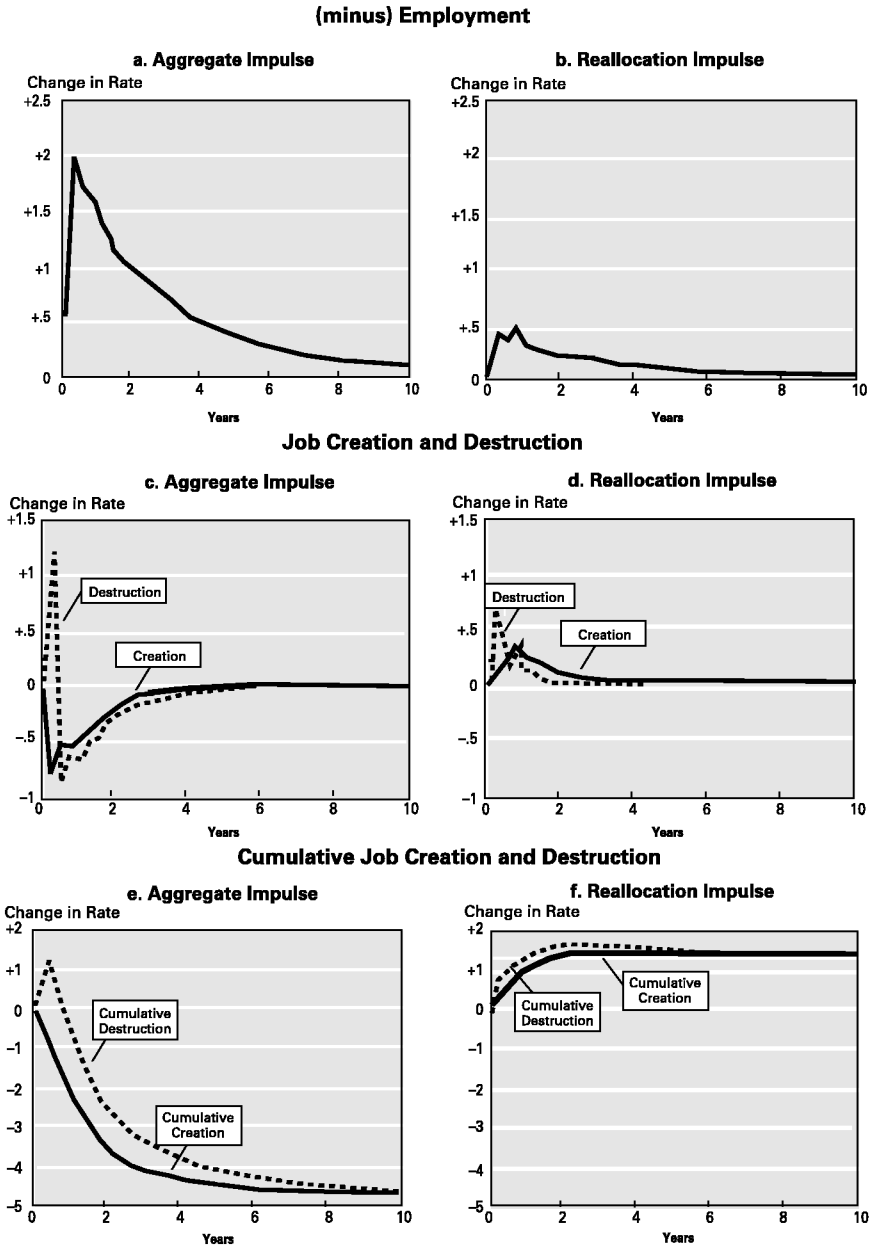
conclusion that reallocation shocks are not likely to be responsible for a substantial fraction of aggregate employment fluctuations, but they seem to account for an important fraction of gross flows fluctuations, especially job creation.

[9] See Davis and Haltiwanger (1997) for a shift in this direction. This is also a merit of the current paper.

Figure 3
Impulse Responses Using Model-Generated Data



Source: VAR used in Figure 1, using model-generated data. See the text.

Conclusion

Let me summarize my views on this paper and the reallocation literature:

- This paper provides a useful organization of existing and new facts on job flows. Further investigation of a few of the correlations found, especially those between price dispersion and reallocation, seems warranted and may prove rewarding.
- Reallocation shocks per se, real or invented, are not likely to have played a large role in U.S. net manufacturing employment fluctuations over the last 30 years.
- The story may be quite different for *gross* flows and their accumulation. Furthermore, the change in the churn rate caused by these reallocation shocks may have important welfare costs or benefits not captured in unemployment.
- Having said this, I have lost some of my belief in the usefulness of a canonical decomposition in terms of aggregate and reallocation shocks. Realistic microeconomic frictions and heterogeneity will transform almost any observed shock into a complex and highly variable mix of both "canonical shocks."
- This is not to say that we should not look at the cyclical aspect of the reallocation *process*. On the contrary, the reallocation process seems to interact and correlate in important ways with the business cycle. This observation makes an analysis of the churn central to the modern study of economic fluctuations and their cost. I find it difficult to consider questions such as: What is the natural rate of unemployment? or What are the cost and incidence of recessions? without thinking about the reallocation process and its obstacles.

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