Productivity Growth and Resource Reallocation in France: The Creative Destruction Process.

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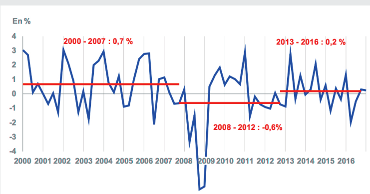
Introduction

The slowdown in productivity growth, which has been observed in France since the beginning of the 2000s, has accelerated since the beginning of the financial crisis in 2008

Figure 1: The slowdown in the French TFP growth



Quarterly annualized growth rates - Fields: all market sectors - Source: INSEE, author's calculations.

Two possible explanations:

- The first explanation would lie in the difficulties to reallocate resources to the most productive firms (Cette & al., 2017) => Resource Misallocation
- The second explanation would be the insufficient firm-specific internal performance ("Learning Effect" in the Baldwin and Raffiquzzaman (1995) terminology)

Methodology

Aggregate productivity for either the whole economy or sector in year t is defined as the weighted average productivity of each firm:

$$P_t = \sum_i \theta_{it} p_{it}$$

where θ_{it} represents the share of the value added of the firm i in year t and p_{it} measures the log of the firm-level TFP.

FHK's decomposition

$$\Delta P_t = \underbrace{\sum_{i\in C}\theta_{it-k}\Delta p_{it}}_{Intra\ effect} + \underbrace{\sum_{i\in C}\Delta\theta_{it}(p_{it-k}-P_{t-k})}_{Inter\ effect} + \underbrace{\sum_{i\in C}\Delta\theta_{it}\Delta p_{it}}_{Covariance}$$

$$+ \underbrace{\sum_{i\in N}\theta_{it}(p_{it}-P_{t-k}) - \sum_{i\in X}\theta_{it-k}(p_{it-k}-P_{t-k})}_{Net\ entry\ effect}$$

GR's decomposition

To measure baseline productivity, Griliches and Regev (1995) use the average of the aggregate productivity between two periods ($\bar{P}$):

$$\Delta P_t = \underbrace{\sum_{i\in C}\bar{\theta}_i\Delta p_{it}}_{Intra\ Effect} + \underbrace{\sum_{i\in C}\Delta\theta_{it}(\bar{p}_i-\bar{P})}_{Inter\ Effect} + \underbrace{\sum_{i\in N}\theta_{it}(p_{it}-\bar{P}) - \sum_{i\in X}\theta_{it-k}(p_{it-k}-\bar{P})}_{Net\ entry\ effect}$$

MP's decomposition

Based on the static decomposition of Olley and Pakes (1996) – henceforth OP –,

$$\Delta P_t = \underbrace{\Delta\bar{p}_t}_{Intra\ Effet} + \underbrace{\Delta cov(\theta_{it}, p_{it})}_{covariance}$$

$$+ \underbrace{\sum_{i\in N}\theta_{it}\left[\sum_{i\in N}\frac{\theta_{it}}{\sum_{i\in N}\theta_{it}}p_{it} - \sum_{i\in C}\frac{\theta_{it}}{\sum_{i\in C}\theta_{it}}p_{it}\right] - \sum_{i\in X}\theta_{it-k}\left[\sum_{i\in X}\frac{\theta_{it-k}}{\sum_{i\in X}\theta_{it-k}}p_{it-k} - \sum_{i\in C}\frac{\theta_{it-k}}{\sum_{i\in C}\theta_{it-k}}p_{it-k}\right]}_{Net\ entry\ effect}$$

Data and some descriptive statistics

The data used in this study were obtained from the fichier complet unifié de SUSE (FICUS) published by the INSEE, which provides information on the economic and accounting variables of firms.

Sector estimates for labour and capital elasticities are made based on the notion of "enterprise" according to the definition of the French law of the Modernization of the Economy Act (LME Law) that was adopted in August 2008, which considers the group dimension. We used the Financial Liabilities Survey (LIFI) to identify the groups and their subsidiaries

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Table 1: Number of firms by type

Type of enterprise	Nombre annuel moyen[1]		
	2000-2007	2008-2012	2009-2012
Entering	8 615	2 883	2 219
Exiting	5 118	6 361	6 648
Continuing	19 111	32 296	41 589

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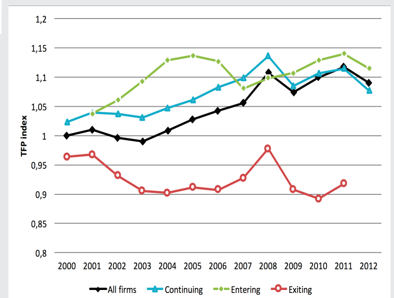
Figure 1: Average TFP for all the firms with respect to type

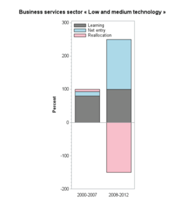


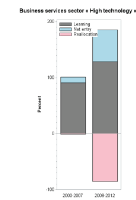
Note: Average TFP - normalized by the average TFP of all the firms in the sample, weighted by the share of value added. The TFP index is normalized to 1 in 2000 for all the firms.
Source: Author's calculation based on Ficus-Fare

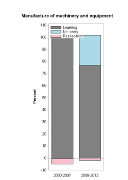
Table 2: Decomposition of the AAGR1 of TFP according to FHK, GR and MP (All sectors – enterprise within the meaning of LME)

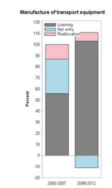
Period	Δ TFP (%)	Learning	Reallocation to continuing firms	Entry	Exit	Net entry
FHK!						
2000-2007	0.66	0.18 (28)	0.18 (27)	0.18 (28)	-0.11 (-17)	0.29 (44)
2008-2012	-0.32	-0.91 (281)	0.28 (-87.5)	0.02 (-6)	-0.28 (-88)	0.30 (-94)
2009-2012	0.36	-0.45 (-125)	0.38 (105)	0.08 (22)	-0.36 (-100)	0.44 (122)
GR						
2000-2007	0.66	0.35 (54)	0.04 (6)	0.10 (15)	-0.17 (-26)	0.27 (41)
2008-2012	-0.32	-0.56 (175)	-0.04 (13)	0.04 (-13)	-0.24 (75)	0.28 (-88)
2009-2012	0.36	-0.16 (-44)	0.07 (19)	0.07 (19)	-0.37 (-103)	0.44 (122)
MP						
2000-2007	0.66	0.44 (66)	0.10 (15)	0.01 (2)	-0.12 (-19)	0.13 (20)
2008-2012	-0.32	-0.44 (138)	-0.24 (75)	0.04 (-13)	-0.32 (100)	0.36 (-113)
2009-2012	0.36	-0.24 (-67)	0.14 (39)	0.07 (19)	-0.40 (-111)	0.47 (131)

Note: the aggregated sectoral TFP in France increased by 0.36% on average per year between 2009 and 2012. According to FHK's decomposition, the learning process (intra) contributes -0.45 pp whereas the reallocation of resources to continuing firms contributes +0.38 pp (reallocation to continuing firms = inter + covariance). The net entry effect contributes 0.44 pp (entry - exit). The values in parentheses are percentages and represent the share of each component in the rate of change in aggregate TFP.
1 AAGR=average annual growth rate.



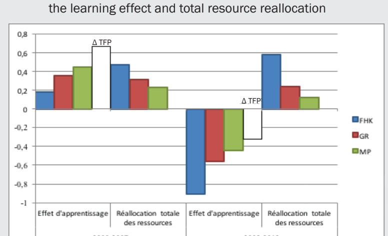






Results

Figure 2: AAGR change in TFP (Δ TFP) and the contribution of the learning effect and total resource reallocation



Note: Total reallocation resources = reallocation to continuing firms + net entry

Conclusion

- The 2008 crisis has negatively impacted aggregate TFP growth. The learning effect (measured here by the intra component) is the main contributor to the decrease in aggregate TFP in France that occurred after the crisis.
- The total effect of resource reallocation (reallocation to continuing firms + net entry) has acted as a shock absorber for the decline in aggregate productivity during the post-crisis period.
- During the post-crisis period, the results obtained also highlight a "cleansing effect" via the Schumpeterian process of creative destruction
- The manufacturing sectors were hit particularly hard by the financial crisis of 2008. This could be explained to a certain extent by their low capacity to adjust their production scale compared to that of the service sectors and by a poorer allocation of resources.