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The pre-Great Recession slowdown in productivity

Gilbert Cette [a,c], John Fernald [b,*], Benoît Mojon [a]

[a] Banque de France, France
[b] Federal Reserve Bank of San Francisco, Research Department, 101 Market Street, San Francisco, CA 94960, United States
[c] Aix-Marseille Univ. (Aix-Marseille School of Economics), CNRS & EHESS, France

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ABSTRACT

In the years since the Great Recession, many observers have highlighted the slow pace of productivity growth around the world. For the United States and Europe, we highlight that this slow pace began prior to the Great Recession. The timing thus suggests that it is important to consider factors other than just the deep crisis itself or policy changes since the crisis. For the United States, at the frontier of knowledge, there was a burst of innovation and reallocation related to the production and use of information technology in the second half of the 1990s and the early 2000s. That burst ran its course prior to the Great Recession. Continental European economies were falling back relative to that frontier at varying rates since the mid-1990s. We provide VAR and panel-data evidence that changes in real interest rates have influenced productivity dynamics in this period. In particular, the sharp decline in real interest rates that took place in Italy and Spain seem to have triggered unfavorable resource reallocations that were large enough to reduce the level of total factor productivity, consistent with recent theories and firm-level evidence.

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1. Introduction

Since the Great Recession began in 2007, productivity growth in advanced economies has continually surprised to the downside.[1] A severe downturn and slow recovery could affect productivity through various channels, both cyclical and structural. But, as we emphasize, the slowdown in advanced-economy total factor productivity (TFP) growth was broadly underway prior to the crisis.[2] The pre-Great Recession timing suggests the importance of factors other than just the deep crisis (or ensuing policy changes) itself.

To understand the evolution of advanced-economy TFP growth prior to the crisis, we highlight three broad factors that have shaped the global economy in recent decades: Technical change, structural rigidities, and declining real interest rates and abundant credit. Each factor has attracted analysis and attention but they have not, typically, been considered together. For expositional clarity as well as data availability, we focus on a small number of major advanced economies: the U.S. and the four main Euro Area countries (Germany, France, Italy, and Spain). For the United States, which we assume is at the frontier of knowledge, we highlight the temporary burst of innovation and reallocation related to the production and use of information and communications technology (ICT) in the late 1990s and early 2000s. That burst ran its course prior to the

* Corresponding author.
E-mail address: fernaldjg@gmail.com (J. Fernald).

[1] See, for example, Tett and Gillian, 2015.

[2] Other studies emphasizing the pre-crisis slowdown in advanced economies include OECD (2015); IMF (2015); Bergeaud et al. (2014); Crafts and O'Rourke (2013). For the United States, Fernald (2014); Byrne et al. (2013) contain references. An early analysis is by Jorgenson et al. (2008).

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Great Recession and forms the backdrop for continental Europe. There, we emphasize changes in the distance to the frontier that started in the mid-1990s: (i) favorable resource reallocations that did not happen because of structural rigidities in labor- and product markets (France, Germany, Italy and Spain); and (ii) also the unfavorable reallocations—rising misallocation—that did happen in response to sharp falls in the cost of funding (Italy and Spain). For southern Europe, we provide some new macro evidence in favor of theories that low real interest contributed to rising misallocation and low productivity growth.

Fig. 1 motivates our perspective. The figure shows levels of TFP for major economies.[3] Post-war convergence in TFP levels stopped in the early 1980s in the U.K., France and Italy and at the end of the same decade in Germany, Spain and Japan.[4] By 1995, advanced European economies were essentially equal to the U.S. level of TFP, though Spain remained somewhat behind.[5] Japan was even further behind the frontier.

Between 1995 and 2007, however, countries stop moving together. The U.K. not only keeps pace with the U.S., it pulls ahead somewhat. France and Germany drift down relative to the frontier. But TFP growth in Italy, Spain and Japan plunge relative to the frontier.

To understand these trends, we first discuss the pre-GFC slowdown in productivity growth at the frontier, which we take to be the United States. Labor and total factor productivity (TFP) growth had a resurgence in the second half of the 1990s and early 2000s. But productivity growth slowed markedly prior to the GFC. We update estimates from Fernald (2014), who links this rise and fall to the production and use of information and communications technology (ICT). A large literature argues that ICT can have a broad-based and pervasive effect through its role as a general purpose technology (GPT) that fosters complementary innovations, such as business reorganization. But the transformative nature of these reorganizations is, plausibly, limited. For example, once retailing was reorganized to take advantage of faster information processing, the gains may have become more incremental.

Second, for France, Germany Italy and Spain, we highlight how labor and product market regulations made these favorable ICT-related reallocations more difficult. This view, which has arguably been the conventional wisdom since at least the mid-2000s, reflects reallocations that never happened, especially in market services such as distribution and transportation.[6] In other words, the relative weakness in European productivity growth reflected the interaction of within-country institutions and changes in global technology.

Third, for peripheral European economies such as Italy and Spain, the reallocations that did occur reduced productivity. Since at least the introduction of the euro in 1999, TFP growth in Italy, Spain, and Portugal has been about zero or even negative.[7] In the context of Italy, Hassan and Ottaviano (2013) describe this as "the great unlearning" of negative TFP growth. A number of studies (cited in Section 4) find that the allocation of resources worsened in southern Europe but not in other advanced economies. Other things equal, this reduced TFP growth because the average efficiency of production got worse.

Why did misallocation rise in southern Europe? A recent strand of literature (e.g., Reis, 2013; Gopinath et al.; 2015; Gorton-Ordonez, 2015) argues that low real interest rates and abundant credit led to misallocation and weak productivity growth. For example, in Reis (2013) model, capital inflows into a country that has inefficient financial intermediation not only reduces real interest rates but induces a shift towards lower quality entrepreneurs. Lower interest rates encourage more entrepreneurs to seek to create firms. At the margin, banks are willing to fund those firms rather than more productive ones because of a financial friction: Because of information asymmetries, banks allocate funds in part as a function of collateral. Collateral constraints, in turn, cap the borrowing capacity of even the most productive entrepreneurs. As a result, when interest rates fall, banks end up financing investments by less efficient firms. In other words, capital inflows that push interest rates down reduces the average productivity in the economy by lowering the bar for less productive entrepreneurs.

This mechanism can be compounded by a boom in consumption, where tradables are imported and non-tradables are produced by small and inefficient local firms. Kalantzis (2014) shows that the share of non-tradables in domestic output typically increases following episodes of capital inflows (see also Benigno et al. (2015)). Nevertheless, this shift towards non-tradables is probably not the entire story. As Gopinath et al. (2015), for example, show for Italy, Spain and Portugal, misallocation has increased within manufacturing since the launch the euro.

Finally, Challe et al. (2015) describe a third mechanism whereby low interest and "soft budget constraints" reduce the incentives to maintain good governmental institutions such as rule of law. That, in turn, reduces average productivity.

The most novel part of this paper is to provide new evidence that is consistent with a link between lower real interest rates and weaker productivity growth. In particular, we test the implication of the models described above that negative

[3] The data are from Bergeaud et al. (2014). Levels comparisons are fraught with peril, for TFP even more than for GDP; see, for example, Inklaar and Rao, 2014 and Inklaar, 2015. For this reason, small differences should not be overinterpreted. Nevertheless, the patterns in Fig. 1 look relatively consistent across datasets (such as the ones from OECD, Penn World Tables and the Conference Board) and accord with conventional wisdom regarding comparative relative levels and growth rates.

[4] See van Ark et al. (2008) for an overview comparing post-war productivity trends between the United States and Europe.

[5] It does not necessarily follow that these advanced European countries were, at that moment, structurally performing as well as the U.S. For example, several empirical studies find diminishing returns to hours worked and to the employment rate (see Bourlès and Cette (2007), for a survey and estimates). These countries typically had lower levels of hours per worker or the employment rate than the U.S., which could thus make labor productivity and TFP performance of these countries look relatively strong. For example, lower-skilled potential workers might be employed in the U.S. but out-of-the-labor-force in other countries.

[6] See Inklaar (2015); Bourlès et al. (2013); Cette et al. (2013); Van Reenen et al. (2010) for references and discussion.

[7] We do not focus on Portugal in this paper because of its smaller size and lack of industry TFP data for our later analysis.