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Discussion

A comment on Nishimura, Nakajima, and Kiyota's "Does the natural selection mechanism still work in severe recessions? Examination of the Japanese economy in the 1990s"

Tae Okada[a,b], Charles Yuji Horioka[c,d,*]

[a] *Graduate School of Economics, Osaka University, Osaka, Japan*
[b] *Y.P.P. Fellow, Economic and Social Research Institute, Cabinet Office, Government of Japan*
[c] *Institute of Social and Economic Research, Osaka University, Osaka, Japan*
[d] *National Bureau of Economic Research, Cambridge, MA, USA*

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Abstract

Nishimura et al. [Nishimura, K.G., Nakajima, T., Kiyota, K., 2005. Does the natural selection mechanism still work in severe recessions? Examination of the Japanese economy in the 1990s. Journal of Economic Behavior and Organization 58, 53–78] analyze the entry/exit behavior of Japanese firms during the 1990s and find that relatively efficient firms exited while relatively inefficient firms survived during the banking-crisis period of 1996–1997. They conclude that the natural selection mechanism (NSM) apparently malfunctions during severe recessions, but we offer a more plausible interpretation: NSM continued to function effectively even during this period, but aberrant banking practices caused a shift in the type of natural selection from directional to disruptive selection, with the most efficient as well as the least efficient firms being favored and firms of intermediate efficiency being selected against.
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1. Introduction

Previous authors have found that the natural selection mechanism (hereafter NSM) of economic Darwinism works well in normal times, but in an important paper, Nishimura et al. (2005) (hereafter NNK) analyze the entry/exit behavior patterns of Japanese firms during the 1990s and show that this mechanism apparently did not function effectively during the severe recession of the 1990s in Japan and that relatively efficient (high total factor productivity

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* Corresponding author at: Institute of Social and Economic Research, Osaka University, 6-1 Mihogaoka, Ibaraki, Osaka 567-0047, Japan. Tel.: +81 6 6879 8586/8574; fax: +81 6 6878 2766.
E-mail address: horioka@iser.osaka-u.ac.jp (C.Y. Horioka).

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(hereafter TFP)) firms exited while relatively inefficient (low TFP) firms survived during the banking-crisis period of 1996–1997.

NNK's analysis is carefully executed, and while we do not have any major quibbles with the analysis itself, we want to offer an alternative interpretation of their results. NNK conclude from their finding that the NSM apparently malfunctions during severe recessions, but we offer a much more plausible interpretation that assumes that the NSM continued to function effectively even during the banking-crisis period of 1996–1997 but that there was a shift from one type of natural selection to another as a result of a number of aberrant practices followed by banks.

2. Did the NSM continue to function effectively during Japan's severe recession?

NNK conclude that the NSM malfunctioned during the banking-crisis period of 1996–1997, but they use an unduly narrow concept of natural selection. In this section, we describe three types of natural selection and argue that the NSM continued to function effectively even during the 1996–1997 period but that there was a shift from one type of natural selection to another.

In the theory of evolution, there are at least three types of natural selection: (1) "stabilizing selection", which acts against phenotypes at both extremes of the distribution and favors the multiplication of intermediate phenotypes, (2) "directional selection", which acts against only one extreme of phenotypes, causing a shift in the distribution toward the other extreme, and (3) "disruptive selection" (sometimes also called "diversifying selection"), which acts against intermediate phenotypes, creating a bimodal distribution (see Darlington and Mather, 1949; Mather, 1953, 1955 for more details).

If we apply this taxonomy to the case of the Japanese economy of the 1990s, our interpretation is that, until 1995, the NSM functioned effectively in Japan and that the Japanese economy exhibited "directional selection", with natural selection favoring relatively efficient (high TFP) firms. Thus, relatively inefficient (low TFP) firms exited, and relatively efficient (high TFP) firms survived, as shown by NNK.

However, during the banking-crisis period of 1996–1997, banks engaged in both "forbearance lending" ("evergreening") and the "forcible withdrawal of loans" and/or the "reluctance to lend" (these two practices are collectively referred to as "credit crunch"), and this caused natural selection to favor firms at both extremes. This caused a shift in the type of natural selection from "directional selection" to "disruptive selection", but the NSM continued to function effectively even during this period. In what follows, we describe in more detail the aforementioned banking practices and how they led to a shift in the type of natural selection (see Kobayashi et al., 2002; Ogawa, 2003; Peek and Rosengren, 2005 for more details).

"Forbearance lending" ("evergreening") refers to the practice of banks continuing to lend to less efficient (low TFP) firms to keep them afloat, thereby avoiding the need to declare existing loans to these firms as non-performing. Banks engaged in this practice during the banking-crisis period of 1996–1997 because the severe recession and the concomitant collapse of asset prices led to a proliferation of non-performing loans while myopic bank managers wanted to delay writing off those loans until they had retired and received the full amount of their lump-sum retirement allowances, and because the Bank for International Settlements (hereafter BIS) regulations on the capital adequacy of banks introduced in 1993 required banks to meet certain risk-based capital ratios, which created a further incentive for banks to keep non-performing loans off their books. This practice of "forbearance lending" ("evergreening") caused relatively inefficient (low TFP) firms to be favored.

However, banks also engaged in the "forcible withdrawal of loans" and/or the "reluctance to lend", which refers to the practice of banks' calling in loans to more efficient (high TFP) firms and/or reducing their lending to such firms. Banks engaged in these practices during the banking-crisis period of 1996–1997 because the recession and the concomitant collapse of asset prices had reduced bank capital, because banks had to reduce lending to satisfy the newly introduced BIS regulations on the capital adequacy of banks, and because banks had to find some way of securing the funds needed to engage in "forbearance lending" ("evergreening") to less efficient (low TFP) firms. The "forcible withdrawal of funds" and/or the "reluctance to lend" acted against firms of intermediate efficiency and TFP and forced some of them to exit.

Finally, the most efficient (highest TFP) firms presumably did not have loans outstanding to begin with, and even if they did, they could repay those loans without having to exit; moreover, they did not require additional loans to survive. Thus, their survival was not at all threatened by the "forcible withdrawal of loans" and/or the "reluctance to lend".

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