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# Do households smooth expenditure over anticipated income changes? Evidence from bonus payments to public employees in Japan

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### ABSTRACT

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This paper provides new evidence of consumers' reaction to an anticipated sizable change in income. Until FY2002, Japanese public employees received predictable large bonus payments three times a fiscal year (in June, December, and March), but the March bonus was abolished in FY2003. We compare the seasonal patterns of public employees' expenditure before and after the reform of the bonus payment schedule. Contrary to the prediction of the life cycle/permanent income hypothesis (LC/PIH), we find evidence that monthly patterns of household expenditure were significantly affected by the anticipated large change in income pattern. However, at closer inspection, this excess sensitivity of expenditure is observed only for expenditure subcategories of some durability, i.e., durables and semi-durables. Thus, while the LC/PIH does not appear to hold for expenditure (which we observe here), it may still hold for consumption. *J. Japanese Int. Economies* 26 (3) (2012) 405–433. Institute of Economic Research, Hitotsubashi University, 2-1 Naka, Kunitachi City, Tokyo 186-8603, Japan; Economic and Social Research Institute, Cabinet Office, Japan; Institute for International Policy Studies, Toranomon 30 Mori Building, 6F, Torano-

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## 1. Introduction

One of the central tenets of the standard life-cycle/permanent income hypothesis (LC/PIH) is that individuals engage in consumption smoothing<sup>1</sup> and that income changes that are anticipated should not affect the pattern of consumption. According to the hypothesis, individuals optimizing their consumption path dynamically over their lifetime respond to a (predicted) change in income at the time they become aware of the change, not when it actually materializes. Therefore, in theory, there should be no association between individuals' pattern of consumption and an anticipated change in the pattern of income unless some underlying assumptions of the LC/PIH, such as the absence of liquidity constraints, are violated.

However, notwithstanding the straightforward theoretical prediction, empirical studies on the LC/PIH have produced mixed results. A number of empirical studies using aggregate data, such as Campbell and Mankiw (1989), have reported that consumers in fact do respond to predicted income changes at the time they occur (rather than when they first become aware of them). Recent empirical studies using micro data to examine the impact of policy-induced income changes have obtained similar findings (Souleles, 1999, 2002; Parker, 1999; Shapiro and Slemrod, 1995, 2003; Shimizutani, 2006). On the other hand, there are also a number of micro data-based studies focusing on the effect of large and regular (easily predictable) income movements that report that the LC/PIH describes consumption behavior well (Paxson, 1993; Browning and Collado, 2001; Hsieh, 2003).

These conflicting findings may be explained by the fact that earlier studies focused on income shock episodes of different sizes and types to identify the effect of predicted income changes on consumption. While studies that examined relatively small anticipated income movements caused by policy changes often found excess sensitivity in consumption, other studies that examined the effect of large and regular income movements appear to find consumption smoothing.<sup>2</sup> Some scholars employ the bounded rationality argument that consumers behave in the manner predicted by the LC/PIH when the cost of calculating the anticipated income change is low and the utility gain from smoothing consumption is large.

While the bounded rationality argument appeals to economists as it allows for rational economic agents, whether it really holds is open to discussion. Another possible explanation for the mixed results is that some of the cases examined in previous studies were not appropriate episodes for testing the consumption response to anticipated income changes. More concretely, most of the income change data examined in previous studies were constructed using observed household characteristics that are not necessarily randomly distributed (see Johnson et al., 2006; Coulibaly and Li, 2006; Stephens, 2008 for a discussion of this point). In other words, a certain share of previous studies on this topic probably fail to validate the assumption that household characteristics used to construct household income changes are uncorrelated with all other unobserved determinants of consumption growth, rendering their empirical findings less reliable.

Against this background, the purpose of this paper is to exploit an ideal episode of exogenous income change and reliable micro data from Japan's *Family Income and Expenditure Survey* (FIES) to re-examine the issue of consumption smoothing in response to a predictable income change. Specifically, the episode we focus on is the following. Until FY2002, public employees in Japan conventionally received large and predictable bonus payments three times a year, in June, December, and March; however, the March bonus was abolished from FY2003 (i.e., from March 2004), with sufficient advance notice given in FY2002. As this represents a large and predictable income change, we utilize this

<sup>1</sup> The standard LC/PIH predicts that households will smooth their marginal utility but not necessarily consumption itself.

<sup>2</sup> A few more recent studies (Stephens and Unayama, 2011; Hori and Shimizutani, 2009) on Japanese households, for which very detailed and reliable diary-based monthly FIES data are available, report that the monthly patterns of expenditure appear to be significantly affected by anticipated large changes in the pattern of individuals' income.

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