A Lost Decade of Fiscal Misallocation

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Abstract

This project offers a new perspective on the "Lost Decade in Japan" literature built on the seminal work of Hayashi and Prescott (2002). Our research studies the inter-temporal and spatial allocation of Japan's fiscal resources and their macroeconomic implications. We demonstrate that Japan's fiscal resource allocation underwent significant changes in the 1990s, including growing inefficiencies in capital allocation between the public and private sectors, and more public investments allocated towards regions with lower productivity and lower returns to these investment. These findings suggest a deterioration in fiscal resource allocation efficiency during the "Lost Decade".

Our study explains the fiscal pivot towards public investments and low-productivity regions from institutional perspectives. To explore the underlying institutional factors and quantify their macroeconomic consequences, we present a multi-region dynamic general equilibrium model. Utilizing the "institutional accounting" approach developed by Song and Xiong (2024), we back out the institutional parameters governing local governments' lobbying incentives and fiscal discipline. Our preliminary results reveal that Japanese local governments' lobbying incentives intensified during the 1990s, exacerbating the inter-temporal and sectoral allocation of capital. These lobbying incentives have consistently been stronger in lower-productivity regions, with no significant change in their spatial distribution during the 1990s. In contrast, local governments' fiscal discipline was substantially weakened in low-productivity regions compared to high-productivity regions during this period, indicating a worsened spatial misallocation of public investment.

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We next assess the quantitative importance of the inter-temporal and spatial aspects of these institutional changes. Our preliminary results suggest that the weakening of fiscal discipline in low-productivity prefectures plays a major role. Modest adjustments in the spatial allocation of public investments can lead to sizable aggregate productivity gains.

This research aims to provide new insights into the spatial dimension of fiscal policy and its impact on economic stagnation. Using Japan's experience as a case study, our findings may have broader implications for other economies facing similar challenges.

1 Extended Abstract

Japan's "Lost Decade" has been widely regarded as a period characterized by low productivity growth since Hayashi and Prescott (2002). However, the underlying causes of this productivity slowdown in the 1990s remain unclear. In this project, we aim to explore the fiscal aspects of the Japanese economy, specifically examining the role of fiscal resource allocation during the "Lost Decade".

We first document the significant changes in Japan's fiscal allocation in the 1990s. During this period, the share of public investment in total investment rose by more than 4 percentage points (Figure 1).[1] Concurrently, the return on public capital declined to nearly zero, and the gap between the returns on public and private capital widened by 1 percentage point (Figure 2). These trends underscore growing inefficiencies in capital allocation between the public and private sectors.

In addition to the deterioriating sectoral misallocation, a more striking pattern is the emergence of spatial misallocation of public investments from 1995 to 2004. During the period, public investments were disproportionately allocated to regions with lower productivity and lower returns, as shown in Table 1. Notably, this correlation was not observed before 1995 or after 2005. While some improvement in allocation efficiency between public and private investment occurred from 2000 to 2004 – as evidenced by a declining share of public investment in total investment (Figure 1) – this did little to address the persistent spatial misallocation.

Spatial misallocation of public investments diminishes aggregate productivity. The effect can be exacerbated in an economy with mobile labor and private capital. Table 2 shows strong correlations among employment, private and public capital across Japanese prefectures, suggesting that labor and private capital are highly responsive to public capital in Japan. The increased public investments in lower-productivity prefectures from 1995 to 2004 may have induced further reallocation of labor and private capital to these regions, thereby amplifying the aggregate productivity loss stemming from the misallocation of public capital.

We explain the fiscal pivot towards public investments and low-productivity regions from institutional perspectives. Japan has a highly centralized fiscal system, where regional government consumption and public investment rely heavily on central government transfers. During the 1990s, local-interest groups in rural and agricultural areas secured substantial transfers, mainly in the form of public works (Ihori et al. (2009)). This reflects not only

[1] In this study, we define public investment as public fixed capital formation by central and local governments, while classifying public fixed capital formation by public enterprises as private investment.

intensified local lobby efforts but also adjustments in central-government policy priorities regarding regional fiscal allocation. One example is the shift in implicit subsidies through local bonds, which play an important role as fiscal resources for local public investment in Japan. The central government in Japan has significant control over the lenders of local bonds in each region, with public funds typically offered at lower interest rates and longer maturities compared to private funds (Ihori and Sato (2002)). Our calculation of the effective interest rate – derived by dividing actual interest payments by the amount of outstanding local debt – reveals a consistent pattern of implicit subsidies favoring small, low-productivity regions (Table 3). These implicit subsidies appear to particularly relevant between 1995 and 2004, as evidenced by a significant negative correlation between the public investment rate and the effective interest rate of local bonds (Table 3).

To quantify the institutional changes and assess their implications on fiscal allocation efficiency and aggregate productivity, we construct a multi-region dynamic general equilibrium model. Our institutional parameters capture local governments' lobbying incentives and the fiscal discipline imposed on them. To capture the centralized nature of Japan's fiscal system, we assume that a forward-looking Ramsey planner (central government) allocates government consumption and debt, as well as public investment across regions and over time. Unlike the standard Ramsey problem, our Ramsey planner's solution is influenced by these institutional parameters.

Using the "institutional accounting" approach developed by Song and Xiong (2024), we employ a model-based accounting method to infer the institutional parameters from the data. Our preliminary results reveal the following findings:

- Local government's lobbying incentives are consistently stronger in lower-productivity regions and intensified during the 1990s. Notably, we find no evidence of any significant change in the spatial distribution of these lobbying incentives over time.
- Local government's fiscal discipline was substantially weakened in low-productivity regions compared to high-productivity regions in the 1990s. This suggests additional favoritism towards low-productivity regions beyond the implicit subsidies provided through local bonds.

These findings indicate that the worsened spatial misallocation of public investment in the 1990s and early 2000s was largely driven by the weakening of fiscal discipline in those low-productivity prefectures. The intensified local government lobby incentives during this period may amplify aggregate losses by directing more resources towards public investments with low spatial allocation efficiency.

We next conduct counterfactual analysis by reallocating public investments in the model economy. We currently adopt a modest approach, adjusting the post-1990 spatial allocation of public investments according to pre-1990 patterns (equalizing public investment rates across prefectures while maintaining the same aggregate public investment rate, motivated by Table 1).[2] A very preliminary exercise shows that the modest adjustment results in an aggregate productivity increase of 0.72% for 2000-04 and 1.18% for 2005-09.

However, these figures come with caveats. On the one hand, our model features perfect mobility in labor and private capital, which amplifies the effect of spatial fiscal misallocation on aggregate productivity. Introducing frictional factor mobility would dampen the quantitatively sizable effects. On the other hand, our model assumes inelastic labor supply. If aggregate labor supply increases with real wage (aggregate productivity), correcting spatial fiscal misallocation might generate an even larger output effect. We will further explore these aspects in the future study.

[2]Future studies could explore more dramatic exercises, such as removing all the spatial misallocation by imposing the first-best allocation of public investments across prefectures.

2 Figures and Tables

Figure 1: Share of Government Investment Within Total FCF

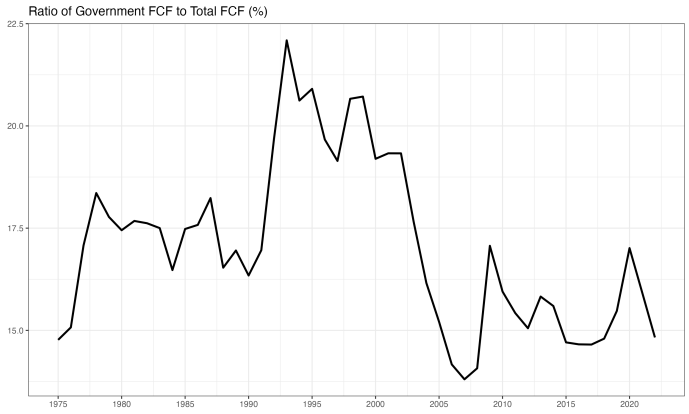


Figure 2: Capital Return



Table 1: Cross-Sectional Allocation of Public Investment

	1985-89	1990-94	1995-99	2000-04	2005-09
			$\frac{I_{it}^G}{G_{it}}$		
$\log A_{it}$	-1.502	1.981	-4.672***	-2.809**	0.622
	(1.565)	(1.711)	(1.634)	(1.226)	(0.778)
R^2	0.020	0.029	0.154	0.105	0.014
			$\frac{I_{it}^G}{G_{it}}$		
r_{it+1}^G	-0.113*	0.056	-0.243***	-0.133***	0.033
	(0.064)	(0.077)	(0.052)	(0.039)	(0.028)
R^2	0.065	0.012	0.326	0.202	0.029

Table 2: Cross-Sectional Correlation Between Other Factors And Public Capital

	1985-89	1990-94	1995-99	2000-04	2005-09
			$\log K_{it}$		
$\log G_{it}$	1.144***	1.204***	1.231***	1.247***	1.273***
	(0.076)	(0.085)	(0.086)	(0.092)	(0.101)
R^2	0.835	0.816	0.819	0.802	0.779
			$\log L_{it}$		
$\log G_{it}$	1.139***	1.190***	1.189***	1.216***	1.269***
	(0.053)	(0.060)	(0.058)	(0.066)	(0.075)
R^2	0.912	0.899	0.904	0.883	0.866

Table 3: Effective Interest Rate of Local Bonds (i_{it}^D)

	1985-89	1990-94	1995-99	2000-04	2005-09
			i_{it}^D		
$\log A_{it}$	5.692***	3.256***	2.788***	6.127***	1.197*
	(1.088)	(0.881)	(0.900)	(1.159)	(0.604)
R^2	0.378	0.233	0.176	0.383	0.080
			$\frac{I_{it}^G}{G_{it}}$		
i_{it+1}^D	-0.066	0.090	-0.467***	-0.880***	0.167
	(0.262)	(0.316)	(0.157)	(0.244)	(0.127)
R^2	0.001	0.002	0.164	0.224	0.037

Table 4: Institutional Parameters

	1985-89	1990-94	1995-99	2000-04	2005-09
			κ_{it}		
$\log A_{it}$	-3.694***	-2.995***	-3.829***	-4.057***	-3.128***
	(0.300)	(0.326)	(0.459)	(0.469)	(0.388)
R^2	0.771	0.652	0.607	0.625	0.591
			ω_{it}		
$\log A_{it}$	0.598***	0.375***	0.665***	0.635***	0.188***
	(0.052)	(0.046)	(0.096)	(0.076)	(0.028)
R^2	0.747	0.601	0.514	0.609	0.503

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