5. Conclusion

In this paper, we provide an otherwise standard neoclassical growth model extended for a time-to-build process in public capital. We assess the quantitative performance of the model using the empirical evidence reported by Leduc and Wilson (2012), who analyze the dynamic impacts of shocks to highway spending on GDP, employment, wages and other relevant macroeconomic variables. They find that public investment in the type of highway construction and maintenance stimulates the three mentioned variables both on impact and after six to eight years, but, between these two booms, an economic slowdown occurs. Restricting our attention to output, employment and wages, we find that the model can predict quantitatively the dynamics of the first two variables, especially the first one.

In fact, even in a restrictive calibration, our model provides a remarkable fit for the short run recession and the subsequent medium run boom in output. However, the theoretical responses imply a muted response in initial periods as well as long run effects of public investment absent from the empirical findings. Concerning the employment, the responses can match the evidence in first periods, including its fall. Moreover, the model can also account for the medium run rise in the variable, though the timing for this subsequent boom is predicted to occur earlier in comparison to estimates. Finally, the model can also account at least for the qualitative growth in wages.

The key elements in the model are the variable capital utilization, adjustment costs in investment and flypaper effects in government spending. The first assumption increases remarkably the degree of the theoretical short run recession in output and employment, and it is crucial for replicating the quantitative patterns observed in the empirical IRFs. Moreover, it provides a natural economic intuition for the stylized facts found in the data. This effect is due to an intertemporal substitution effect on investment decisions, since the expectation of a higher infrastructure stock in the future discourages current capital utilization and accumulation. Even in the absence of wealth effects on labor supply, the model implies the same quantitative decrease in output and employment.

Concerning the adjustment costs in investment, a small degree is required to mitigate the recessive and expansionary effects due to capital hoarding. In the absence of costs to investment, the model deepens slightly the theoretical recession in employment and output. More importantly, the model also amplifies the subsequent boom in both variables. Concerning the employment, the theoretical peak reaches a higher level in comparison to the evidence, though the dynamics of output still remain very consistent with estimates. Finally, weak flypaper effects on public consumption play an important role in generating a short run stimulus on employment, though the model predicts a muted response for output. To the extent that higher costs of local government increase the tax burden borne by households, the flypaper effects provide incentives for agents to substitute leisure for labor.

In summary, in spite of its simplicity and the restrictive parameterization adopted, the presented model is able to rationalize the facts with a plausible economic intuition.