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Crisis, potential output and hysteresis

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ABSTRACT

This paper seeks to estimate the effects of financial crises on potential output accounting for hysteresis on a panel of 34 OECD economies. Hysteresis amplifies the effect of financial crises on potential output. The difference is marginal in the first years (below 0.5% point) but grows over time to about 1/3 after six years. These results are robust to a range of specifications. On average across crisis and country the maximum crisis effect on potential output is about 3%. The effect appears to be more severe for the 2008 crisis though, with a maximum impact above 4% on average for G7 countries. Lastly, the empirical work undertaken in this paper suggests that financial crises have had on average an effect on potential growth in the first years following the crisis but not after.

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1. Introduction

There is now a wide consensus that deep recessions can have persistent effects on the level of potential output. The latter falls because a recession reduces capital accumulation, leaves scars on unemployed whose skills, motivation and attachments to labour markets erode and slows technological progress. These long-term effects reflect what is usually called “hysteresis”, whereby a transitory shock can have a permanent effect through a memory process. As a result the path of potential output depends not only on current inputs, but also on the history of past output.

Lately, a number of papers have concluded that developed economies may have suffered from permanent production losses in the aftermath of financial crises, but the extent of these losses is still debated and usually ranges between 4 and 10%, with a lower amount for OECD countries (Cerra and Saxena, 2008; Furceri and Mourougane, 2012; European Commission, 2009; Ollivaud and Turner, 2014). However, thus far, most models have not explicitly accounted for hysteresis and are thus likely to underestimate permanent losses stemming from financial crises. Moreover, only few analyses have investigated the effects of financial crises on potential growth.

Against this background, this paper seeks to cast light on two issues. First, it estimates the effects of financial crises on potential output accounting for hysteresis on a panel of 34 OECD economies. For this purpose, the model draws on Cerra and Saxena (2008); Furceri and Mourougane (2012) and Teuling and Zubanov (2010). It is enriched to incorporate hysteresis following Kapadia (2005) according to whom a deviation from actual growth leads to a permanent change in potential output. Second, it examines whether financial crises affect the growth of potential output over the long term.

The main findings of the paper are the following. Accounting for hysteresis amplifies the effect of financial crises on potential output. The difference is marginal in the first years (below 0.5 percentage point) but grows over time to reach and

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amounts to about 1/3 after six years. These results are robust to a range of specifications. On average across crisis and country the maximum crisis effect on potential output is about 3%. The effect appears to be more severe for the 2008 crisis though, with a maximum impact above 4% on average for G7 countries. Lastly, the empirical work undertaken in this paper also suggests that financial crises have had an effect on potential growth in the first years following the crisis but not after. This indicates that financial crises are likely to have a permanent effect on the level of potential output though not on its growth.

The paper unfolds as follows. The second section briefly reviews the main channels through which a financial crisis can impact potential output, focusing on hysteresis phenomena, and how the latter have been estimated in the economic literature. The third section presents the model used to estimate those impacts. The fourth section describes the data and the empirical approach. The fifth discusses the main results and a last section concludes.

2. Literature review

2.1. *There is a consensus that financial crisis can impact the level of potential output...*

Financial crises impact potential output through a range of channels. Direct effects are visible on all the components of the production function, namely capital input and labour and total factor productivity (TFP) in standard specifications.

Financial crises lower incentives to invest in *capital* by decreasing demand for products and raising uncertainty on investment returns and risk premia (Pindyck, 1991; Pindyck and Solimano, 1993; Janicko et al., 2012). A decrease in investment growth can translate into durable effects on potential output as a lack of capital reduces future productive capacity and leads to aging capital. Moreover, firms may have to cope with less advantageous investment financing conditions due to tighter lending standards in the form of an increasing real cost of borrowing, stricter collateral requirements and/or limited credit supply. This could constrain them to stick with less efficient production process.

On labour markets, Ravn and Sterk (2012) show that a major uncertainty shock can result in large increases in unemployment because of a declining matching efficiency. Moreover, a cyclical change in labour demand can lead to a supply adjustment through insiders/outside effects (Blanchard and Summers, 1987; Lindbeck and Snower, 1988) or skill losses (Pissarides, 1992). In the insiders/outside model, trade unions or lobbies defend the interest of their members in wage negotiations, which can lead to a lower level of employment for those who are not part of the group when the recession ends. Skill losses can occur when long-term unemployed or discouraged job seekers see their human or social capital deteriorating. Recent evidence is however less conclusive on the role of job spells in deepening the economic damages to worker from a financial crisis. Despite the clear evidence that involuntary job loss of any duration leaves economic scars on households and workers, the worsening of these scars by long-lasting jobless spells is actually quite thin (Bivens, 2014). Still long unemployment duration is often used as a signalling mechanism of the productivity of potential hires: firms are reluctant to employ staff who have not worked for a long time and are considered costly to re-employ (Llaudes, 2005).

The effect of the crisis on labour force participation combines a discouraged worker effect – whereby the deterioration in labour markets incites workers to leave the labour force and an encouraged workers effect – where the loss in revenue encourages second-earner to seek a new job and to enter the labour force. Evidence from the literature suggests that discouraged worker effect can be significant (Elmeskov and Pichelmann, 1993) and has been dominant in developed countries (Lee and Parasnis, 2014). Erceg and Levin (2013) and Hall (2014) found that, for the recent crisis, the shortfall of labour force participation from its pre-crisis trend was about 2 percentage points in the United States. However, past evidence suggests that the encouraged worker effect can be also important, in particular for females (Debelle and Vickery, 1998).

The crisis impact on TFP has been identified as the main factor explaining country differences in potential output in the aftermath of a crisis (Koopan and Székely, 2009). Many factors are at play and their combining effect on potential output depends on their relative importance:

- A decline in investment can slow TFP. This is for instance the case for RD spending, which is usually pro-cyclical.
- A slower sectoral reallocation can restrain productivity by limiting resources devoted to the most productive sectors.
- By contrast, a crisis can favour innovation and have persistent effects on productivity at least in some sectors such as railways (Field, 2012).

Overall, a growing number of studies have found that deep recessions in the world have had a highly persistent effect on the level of potential output. This effect is estimated to range between 1.5% and 20% but most studies conclude to an average effect of crises between 4% and 10%. The effect is estimated to be lower for OECD countries (cf. Appendix A). The impact is estimated to be much less pronounced for developed economies and to amount to 1% in Cerra and Saxena (2008) and 1.5–2% in Furceri and Mourougane (2012).

2.2. *...but evidence of the growth impact of financial crises is scarce*

Past crises' experiences and economic analyses suggest that three configurations are possible after a severe financial crisis such as those of 2008:

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