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Effective Public Investment  
at Sub-National Level in Times  
of Fiscal Constraints:  
Meeting the Co-ordination  
and Capacity Challenges**

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**Public Investment at Central and Sub-national  
Levels: An Adjustment Variable for OECD  
Countries in the Present Context of Austerity?**

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The opinions expressed and arguments employed herein are those of the author and do not necessarily reflect the official views of the OECD or of the governments of its member countries

**PUBLIC INVESTMENT AT CENTRAL AND SUB-NATIONAL LEVELS:  
AN ADJUSTMENT VARIABLE FOR OECD COUNTRIES IN  
THE PRESENT CONTEXT OF AUSTERITY?<sup>1</sup>**

Information note (draft)

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## Introduction

1. Public investment is known to be one of the most variable items in government spending.<sup>2</sup> As early as 1988, the World Bank<sup>3</sup> established that governments cut capital spending by 35% on average during fiscal adjustment periods, as against 10% for current expenditures. These conclusions were confirmed by later studies.<sup>4</sup>

2. Because OECD countries have recently embarked on the most dramatic fiscal consolidation efforts in decades, public investment is decreasing sharply, especially for those most severely hit by the crisis (Box 1). As the debate on excluding public investment from deficit calculations is heating up, in particular in Europe, this paper analyses how much public investment has been affected in these times of economic crisis and generalised fiscal austerity. In addition, it introduces the distinction between the different levels of government involved in public investment and the differentiated impact on these – which is an aspect often overlooked in the literature – and the relationship with private investment. Now that recovery plans are over in most OECD countries, public investment seems to be used as an adjustment variable, both at national and sub-national levels, and is a target of cuts, while private investment is simultaneously sinking in many economies.<sup>5</sup> This combined decrease in both private and public investment may have long-term consequences.<sup>6</sup> The evolution of public investment in individual countries can be seen as an additional indicator of the depth of the crisis (as it is closely linked to the severity of the crisis they endured).

3. The paper is structured as follows: the first section describes long-term trends in public investment (at the general government<sup>7</sup> level), in terms of GDP, of amounts per capita, and in comparison with private investment. The second section focuses on the evolution of sub-national public investment and how it was affected by the 2008-09 crisis and subsequent consolidation periods. The third section analyses how both central and sub-national governments used public investment as an adjustment variable, supporting it during the crisis and stimulus programmes, and cutting it in the context of consolidation plans. The last section concludes.

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<sup>2</sup> Public investment, in particular by sub-national governments, also follows the political cycles (Hoorens, 2003), but this issue will not be addressed in this paper.

<sup>3</sup> World Bank World Development Report 1988.

<sup>4</sup> See for example: Balassone and Franco (2000), or Blanchard and Giavazzi (2003).

<sup>5</sup> Public and private investment are generally closely linked: public investment may have either a multiplier effect on private investment, or on the contrary, may step in to compensate an insufficient supply of private investment. The multiplier or compensatory effects of public investment will be analysed in a future study.

<sup>6</sup> Public investment in infrastructure alone is not sufficient for growth, but it can contribute to it if it is integrated with additional levers of growth in coherent place-based policies (OECD, 2009; Crescenzi and Rodrigues Pose, 2012)

<sup>7</sup> General government comprises central government, sub-national governments (state/regional when relevant and local/municipal) and social security.

### Box 1. Defining and Measuring Public Investment

*Public investment* is generally understood as capital expenditure that finances projects for physical infrastructure (such as roads, government buildings etc.) and soft infrastructure (human capital development, innovation, and research and development) that go beyond the fiscal year. The way public investment is measured across countries varies. **In this paper, gross fixed capital formation (GFCF) will be used as a proxy for public investment.**

GFCF is defined in the National Accounts as: *“acquisition less disposals of produced fixed assets, i.e. assets intended for use in the production of other goods and services for a period of more than a year. Acquisition includes both purchases of assets (new or second-hand) and the construction of assets by producers for their own use.*

*The term produced assets signifies that only those assets produced as a result of a production process recognized in the national accounts are included. The national accounts also record transactions in nonproduced assets such as land, oil and mineral reserves for example; which are recorded as non-produced assets in the balance sheet accounts and not as GFCF.*

*Acquisition prices of capital goods include transport and installation charges, as well as all specific taxes associated with purchase”.*

Public investment is difficult to measure. GFCF is a narrow definition, since it does not cover all public spending that could be considered as investment. Indeed, it is sometimes difficult to determine the borderline between GFCF and public consumption. For example, acquisition of software, training of human capital or spending in research and development that does not involve the acquisition of fixed assets will be classified as consumption, although it could have long-term repercussions. Maintenance operations can be classified either as intermediate consumption or GFCF, according to their magnitude. Public-Private partnerships (PPPs) are not necessarily included in public investment figures either.

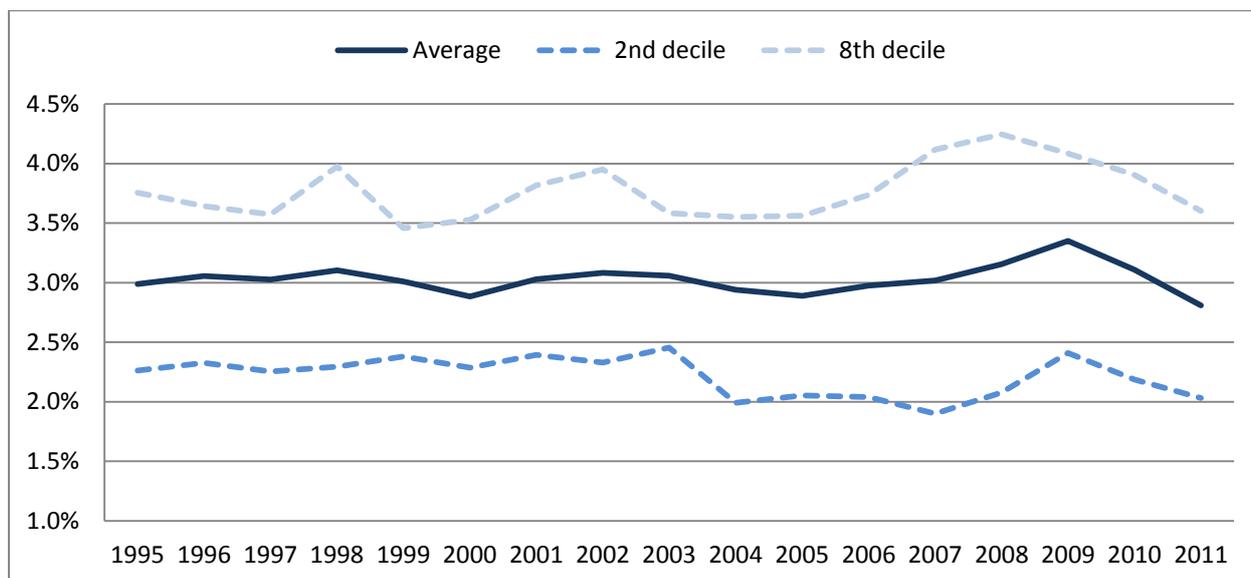
### Long-term trends in public investment

4. General government public investment (measured by public GFCF, see Box 1) as a share of GDP remained relatively stable on average from the mid-90s until the late 2000s. The average level fluctuates at around 3% of GDP, but there are wide disparities between countries (in 2007 for example, 40% of countries have public investment smaller than 2% or larger than 4%) (Figure 1).<sup>8</sup> However, fiscal stimulus plans implemented in 2008-2009, combined with a fall of GDP in a number of OECD countries provoked a peak in 2009. This peak was followed by a fall in 2011, due to the implementation of consolidation strategies in many OECD countries and the recovery of GDP in others (Figure 1).

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<sup>8</sup> To give an order of magnitude, average investment as a share of GDP is higher than the OECD average for research and development (R&D) expenditures (2.3%) and is equivalent to total public and private OECD expenditures for primary and lower secondary education (Allain-Dupré, 2011).

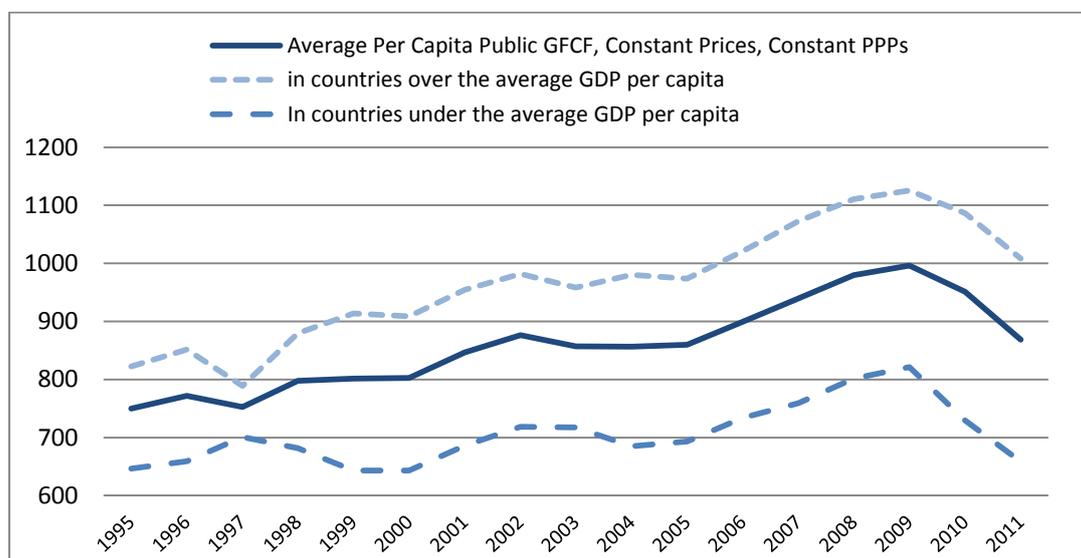
**Figure 1. Average public GFCF as a share of GDP (1995-2011)<sup>9</sup>**



Source: OECD National Accounts

5. When focusing on the evolution of public investment per capita, the picture looks quite different. As population grew slower than GDP, public investment per capita has risen since 1995 in almost all OECD countries (Figure 2). Countries with GDP per capita higher (lower) than the OECD average spend higher (lower) amounts per capita on public investment.

**Figure 2. Public GFCF per capita in OECD member countries (US\$, 2005 = base year)**

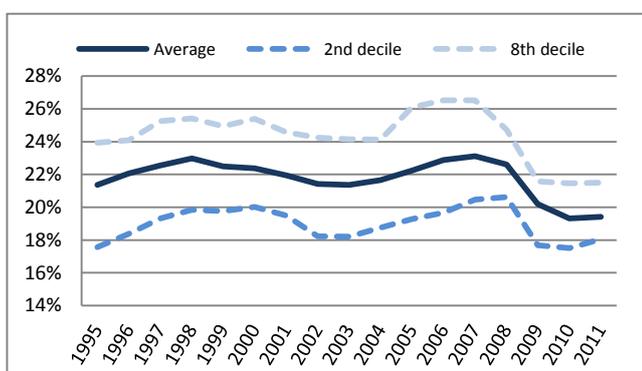


Source: OECD National Accounts

<sup>9</sup> Detailed explanation about the data used for each graph can be found in Annex 1.

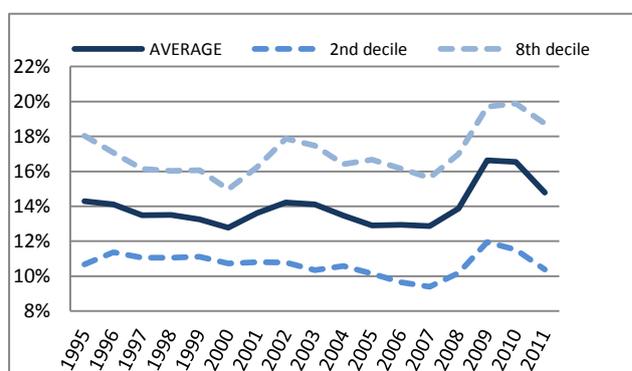
6. Total investment (i.e. public plus private GFCF) fluctuated around 22% of GDP in OECD countries between the mid-1990s and the onset of the crisis, but fell by almost 4% of GDP between 2007 and 2011 (Figure 3). Disparities among countries have decreased since the beginning of the crisis: 60% of the observations are included between the 2<sup>nd</sup> and 8<sup>th</sup> deciles curves, and this distance has decreased by 1% of GDP between 2007 and 2011 (Figure 3). The share of public investment in total investment was stable over the period, fluctuating between 13% and 14% on average (Figure 4). This share rose during the initial phase of the crisis, thanks to the implementation of stimulus packages but also, principally, because private investment fell from 2007 onwards. Since 2009-2010, this share has been decreasing again, due to the consolidation programmes carried out by many countries, combined with a very slight recovery in private investment.

**Figure 3. Average total GFCF in OECD countries (% of GDP)**



Source: OECD National Accounts

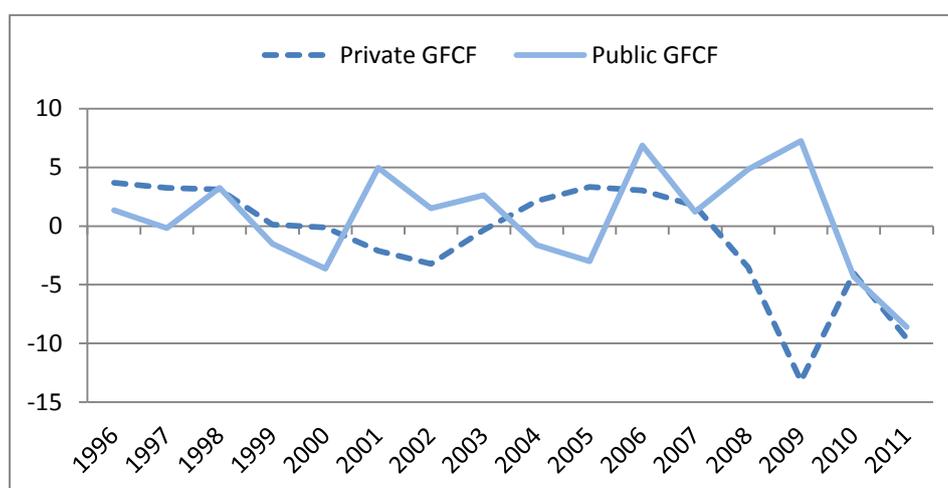
**Figure 4. Public GFCF as a share of total GFCF**



Source: OECD National Accounts

7. Variations in public investment often partly compensate variations in private investment. Since 1995, public investment has tended to increase when private investment fell and vice versa, except for the current consolidation period (Figure 5). Public investment is no longer playing the stabilising/counter cyclical role it had previously.

**Figure 5. Variations in private and public GFCF in OECD countries (in %)**



Source: OECD National Accounts

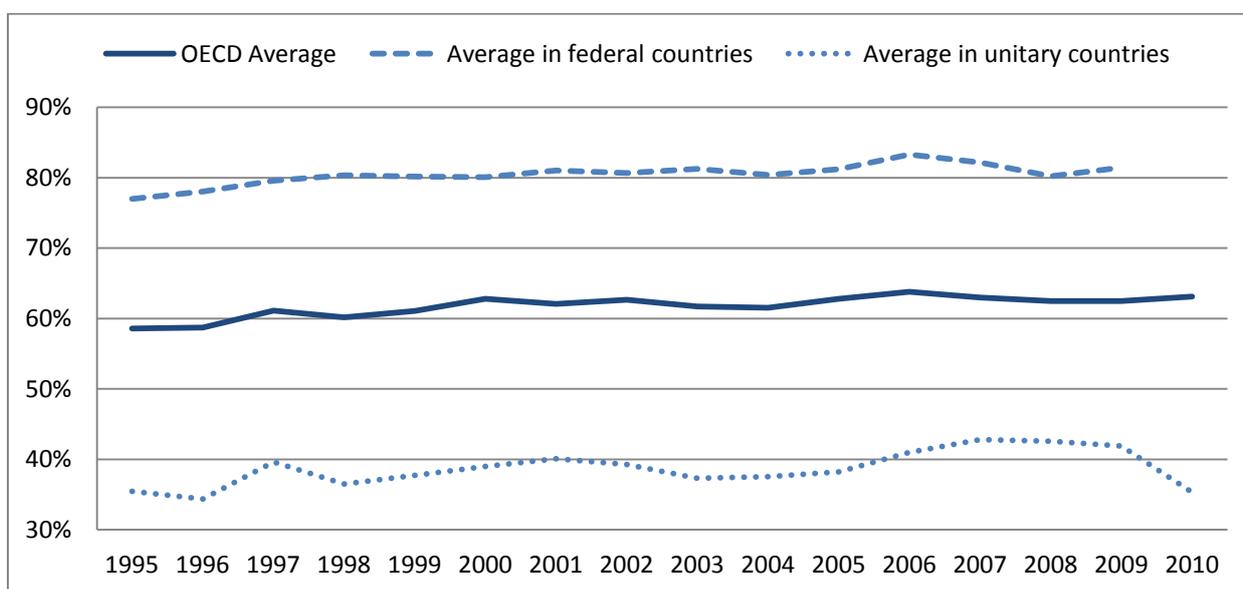
## Trends in sub-national public investment

### *The share of SNGs in public investment has slowly increased since the mid 1990s*

8. SNGs play a key role for public investment, since they are responsible for nearly two third of public investment in OECD Countries. This share has been rising slowly over time (Figure 6), but SNG capital spending has been more volatile than the CG's, at least from the 1980s to the mid-1990s (Sutherland, 2009; OECD, 2011a). Increases in SNG public investment spending may be due to several factors: general decentralisation trends; an increase in the number of projects carried out by SNGs; or the increase of the costs of projects carried, out. The later may be due either to an increase in the cost of materials used, or to new regulations which oblige SNGs to comply with higher standards of environment protection, etc. As an important share of SNG spending is in housing and environment, green regulations may have had an impact on the costs of public investment projects. Future OECD work will enquire further on these different hypotheses.

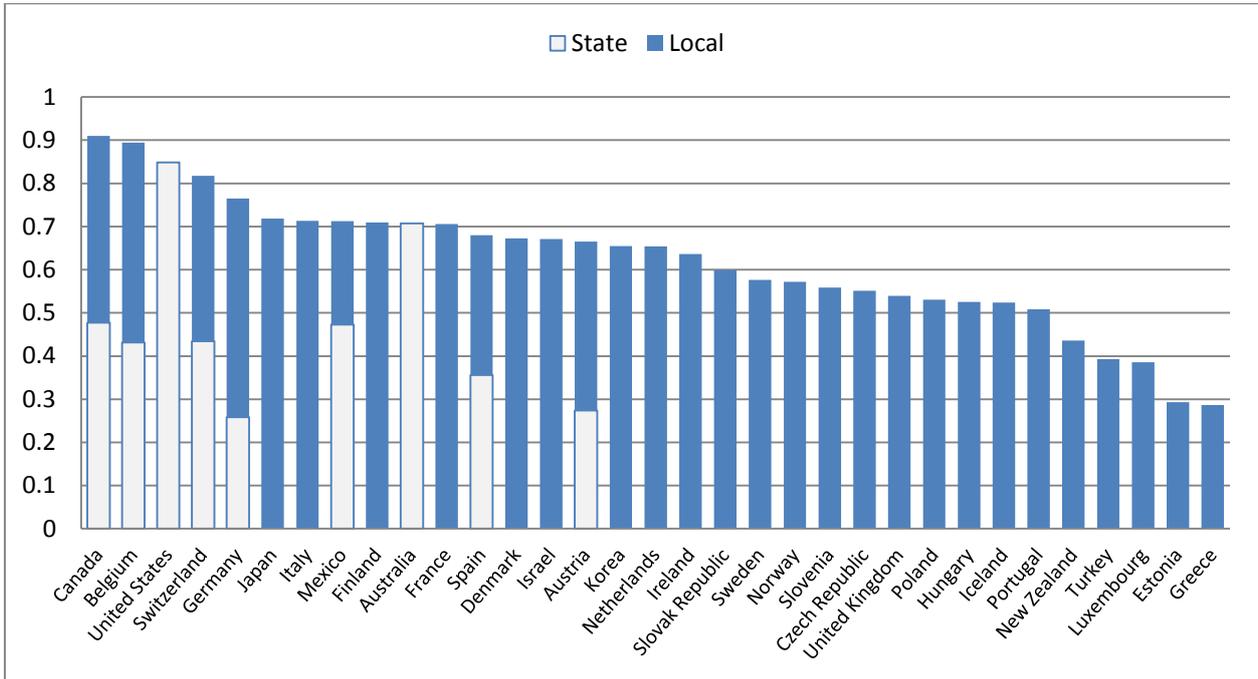
9. However, these averages hide large disparities between countries: federal countries usually have the highest SNG share in public investment (over 80% in Canada, Belgium and the United States), but there are some unitary countries where this share is comparable to federal countries' (France, Japan, and Finland) (Figure 7 and 8). Unitary, historically centralised or very small countries tend to have the lowest share (below 40% on average in Turkey, Luxembourg, Greece and Estonia) (Figure 7 and 8).

**Figure 6. SNGs' GFCF as a share of total public GFCF**



Source: OECD National Accounts

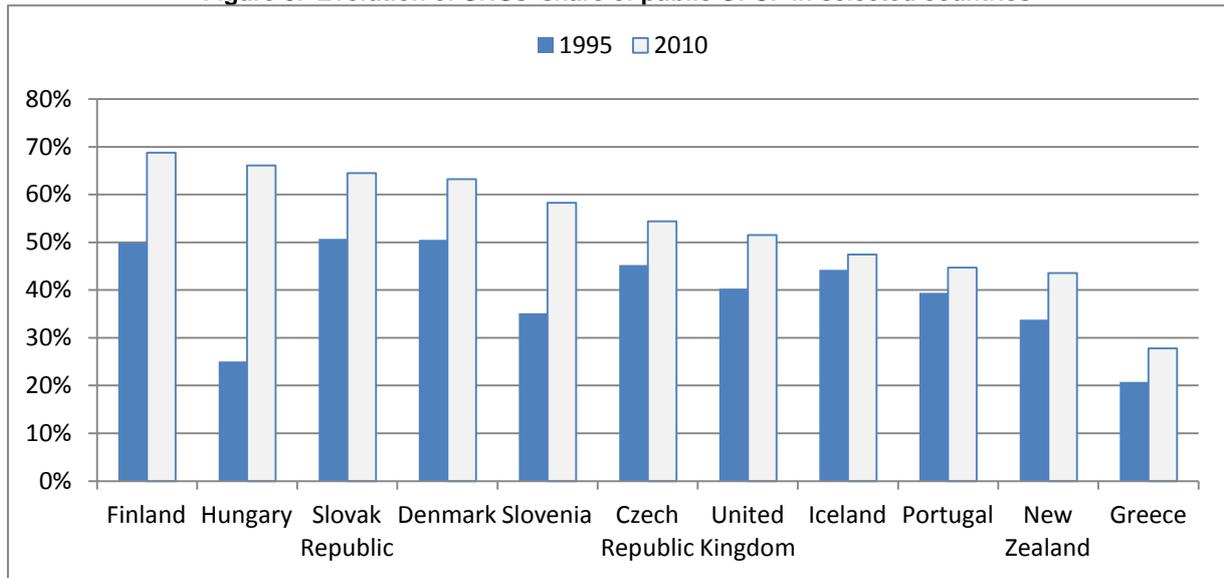
Figure 7. SNG share of GFCF in OECD countries, 2011



Source: OECD National Accounts

10. In the past two decades, many historically centralised countries (mostly in Europe) have provided more responsibilities to SNGs in spending, which had a direct impact on their share in public investment (OECD/KIPF, 2012). This is particularly true in Eastern and Central European countries, where the decentralisation trend was largely influenced by the EU accession process and the higher participation of SNGs in public investment largely due to the delivery of EU cohesion and structural funds for regional development (as in the Czech Republic, Hungary, Slovak Republic and Slovenia) (Figure 8). The share of SNGs in public investment also increased significantly in Northern European countries such as Denmark and Finland.

**Figure 8. Evolution of SNGs' share of public GFCF in selected countries**

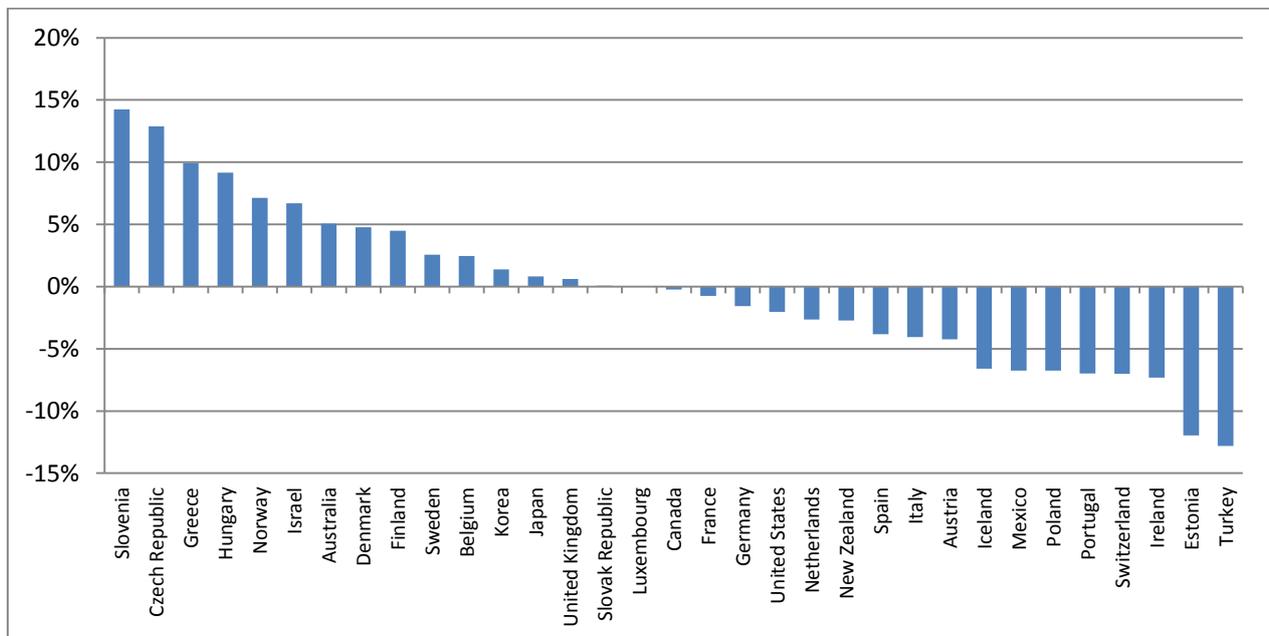


Source: OECD National Accounts

*The crisis interrupted the increasing role of SNGs in public investment in a number of countries*

11. The impact of the crisis on the balance between central and sub-national public investment varied considerably across countries. Approximately half the countries increased the share of SNGs in public investment during 2007-2011, whereas the other half decreased it (Figure 9).

**Figure 9. Changes in the share of SNGs in total public investment (2007-2011)**



Source: OECD National Accounts

12. Changes in the level and share of sub-national public investment during the 2007-2011 period can be explained by several factors. Decreases can be due to different reactions to the crisis: many CGs implemented stimulus programmes that relied heavily on public investment, which may have increased the relative share of CG public investment (OECD, 2011a). Increases in the share of SNG in total public investment may reflect the “lagging effect of the crisis on SNG finances”,<sup>10</sup> combined with measures that CGs often took to facilitate SNG investment during stimulus programmes (such as relaxing procurement rules, reducing regulations, relaxing fiscal rules and debt limits, etc.) (Blöchliger, et al., 2010; OECD, 2011a). This suggests that the decrease in SNG public investment may be yet to come.

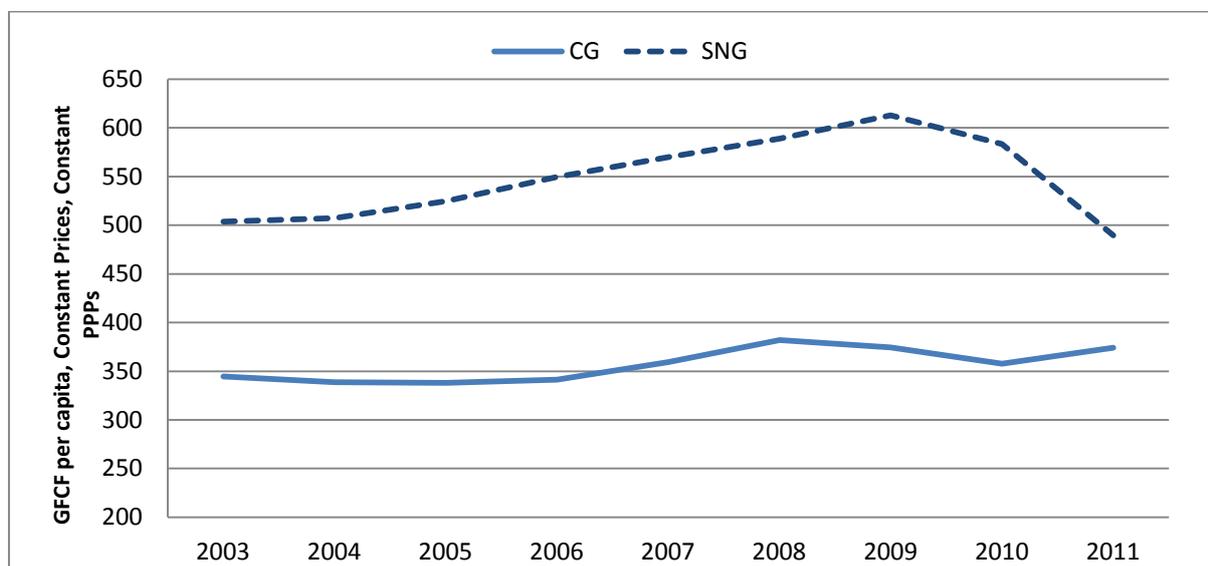
### Public investment in a tight fiscal environment: an adjustment variable

13. The previous sections have described the long-term trends in public investment and the relative share of SNGs. This section focuses on the impact of the 2008-09 crisis and subsequent consolidation period on total public investment, and the consequences that this may have in the long-term.

*After supporting public investment to stimulate the economy during the crisis, many OECD countries are now cutting it to reduce budget deficits*

14. From 2007 to 2009, the implementation of recovery plans in many OECD and G20 countries led to higher levels of public investment at both national and sub-national levels (Figure 10 and 11).<sup>11</sup> However, now that these plans have been executed and that many countries have adopted fiscal austerity packages, public investment is declining sharply, especially for SNGs, and in 2011, it was on average below its 2007 level (Figure 10).

Figure 10. Average public GFCF in OECD countries

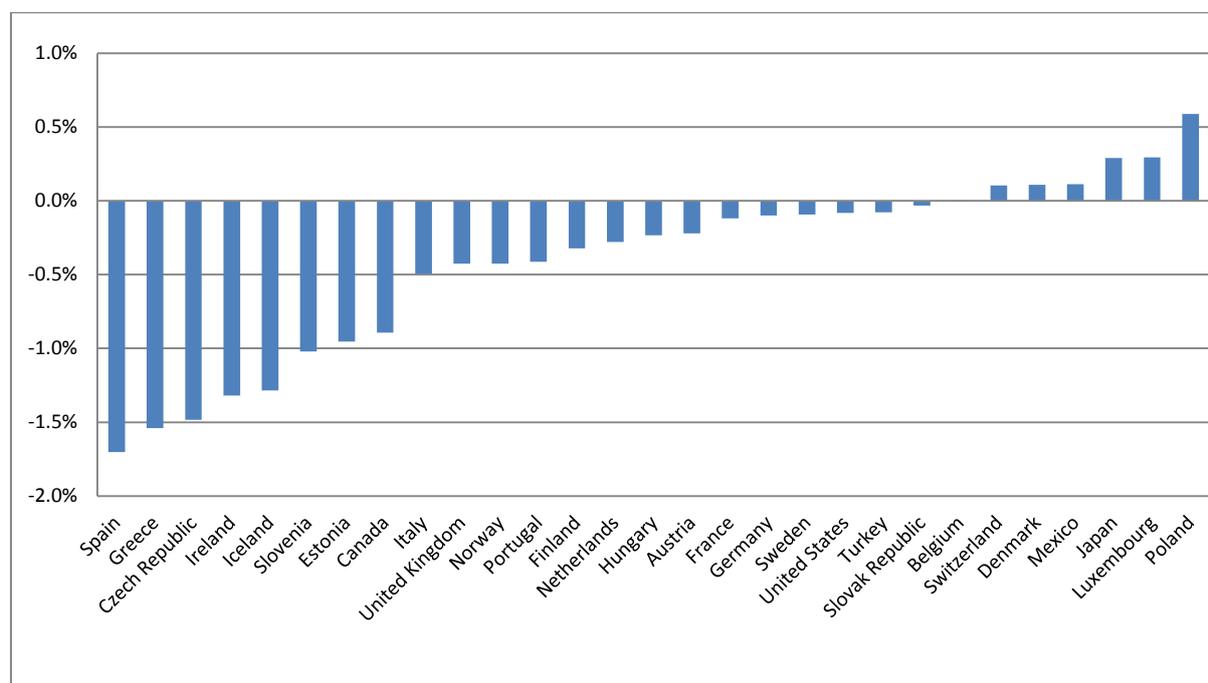


Source: OECD National Accounts

<sup>10</sup> As transfers constitute a large share of SNG revenues, and are often calculated on formulas which take into account tax collections and economic activity of past years, the impact of economic cycles on SNG revenues tends to come with a couple of years lag (Blöchliger et al., 2010)

<sup>11</sup> This section uses GFCF per capita rather than as a share of GDP, as the growth rate of GDP has been very volatile since 2008, which complicates the interpretations of changes in the ratio of GFCF as a share of GDP.

Figure 11. Changes in general governments' GFCF between 2009 and 2011



Source: OECD National Accounts

15. Many consolidation programs envisage or mention explicitly amounts to be saved by reducing public investment. This is the case in Austria, Czech Republic, Greece, Iceland, Ireland, Luxembourg, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and the UK. For some of these countries, targeted amounts are very large: for example, Spain should reduce investments in infrastructures by €33.54 billion between 2011 and 2013 (cumulated) (around 0.9% of GDP per year<sup>12</sup>); the central government also plans to cut all its other investments by 25%. In Greece, planned public investment cuts amount to €40.16 billion over the 2011-2015 period (equivalent to about 13% of GDP per year). Luxembourg, Portugal, Slovak Republic, Slovenia also plan cuts of over €1 billion (OECD, Forthcoming).

16. Other countries, by contrast, have combined austerity measures with specific strategies to support public investment, which is seen as a growth-enhancing form of expenditure. For example, Estonia, France, and Ireland, have introduced investment plans while carrying out their consolidation strategies. In Estonia, the government has promoted growth by keeping investments high; in France, an “investments for the future” programme was launched in 2010; and Ireland launched a “Jobs Initiative” programme in May 2011. In the United Kingdom, the government’s fiscal mandate protects the most productive capital spending (although considerable cuts in capital spending will still be made). Denmark introduced a fiscal stimulus package in 2012 based on increased public investment. Japan, in a very different context, launched a ¥19 trillion (€190 billion) plan for recovery and reconstruction after the Great East Japan Earthquake (OECD, forthcoming). Most of these plans did not involve SNGs in their conception, even if they may involve them in the implementation phase (OECD, 2011a).

<sup>12</sup> Based on OECD GDP projections for 2012 and 2013.

17. Consolidation plans affect public investment directly, through expenditure cuts by CGs, and indirectly, through SNGs. Indeed, many consolidation plans affect SNGs by a reduction in CGs transfers, or the introduction of deficit targets, expenditure limits or debt controls in the context of national stability plans (Italy, Spain, etc.). As SNG's room of manoeuvre for increasing their revenues or cutting expenditure is limited, and as they suffer from a "scissors effect" (*i.e.* the combined impact of decreased revenues and increased demand for social services), SNGs often adjust their budgets by reducing public investment.<sup>13</sup>

***Decline in SNG public investment is aggravated by the lack of liquidity of the private sector***

18. In addition to facing a reduction in their revenues (both taxes and transfers), SNGs financial capacity to fund public investment is also affected by the liquidity crisis of the private sector and the difficult situation of banks (Vammalle, forthcoming). Indeed, even in countries which benefited from the support of CGs or supra-national funds (such as EU funds), the capacity of absorption of funds by SNGs has proven to be limited (Greece, Portugal). In addition to administrative capacity bottlenecks, this is explained by difficulties of SNGs to issue debt to match the funding requirements, and by the difficulties of their private partners to access credit to finance their participation in SNG public investment projects (in public private partnerships for example). The capacity of sub-national governments to finance public investment will be analysed in future work.

***Potential risks linked to a decline of public investment in hard economic times***

19. The decline of private investment subsequent to the lasting and multi-dimensional crisis increased the share of public investment in total investment, and therefore the potential impact of public investment on economic growth. This evolution is stronger in countries facing severe economic difficulties. Although evidence on the effects of public investment spending on output growth is mixed,<sup>14</sup> it is likely that a decrease in public investment could have negative impacts on economic growth.

20. Given that most of public investment is directed to education and economic affairs (Figure 13, Box 3), wide cuts in this budget could affect short-term and long-term growth, especially in times of financial needs and lack of liquidity in the private sector. Regarding education, a prolonged decline in investments could also have a negative impact on long term growth.

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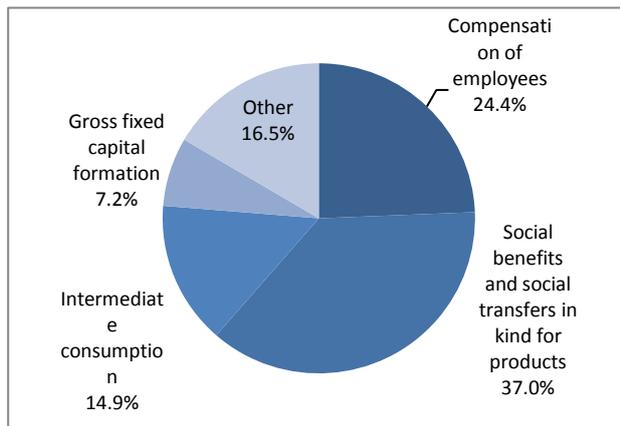
<sup>13</sup> For more details on the involvement of SNGs in fiscal consolidation strategies, see: "Involving sub-national governments in fiscal consolidation", in OECD (Forthcoming). For information on SNG finances, see "Recent trend in sub-national finances: a limited room for manoeuvre", Vammalle (forthcoming).

<sup>14</sup> Cf. Easterly and Levine (2001), IMF (2004), IMF (2005), Perotti (2005), the World Bank (2007), OECD (2009)

## Box 2. Composition of general government expenditure and investment

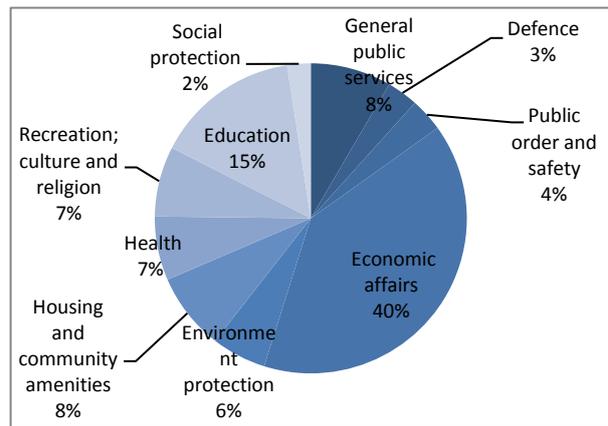
The main components in public spending in OECD countries are compensation of public employees and social benefits/social transfers (Figure 12). GFCF (i.e. public investment) only represented 7.2% of general governments' expenditures in OECD Countries in 2009. It is mainly directed to education and economic affairs (which represent together over 50% of public investment on average) (Figure 13). Economic affairs include most of public support to economic sectors and firms, in particular industry, manufacturing and construction, transport, communication, and R&D.

**Figure 12. Average general government expenditure by main component, 2010**



Source: OECD 2011, National Accounts at a Glance

**Figure 13. Average GFCF per function in OECD countries, 2010**

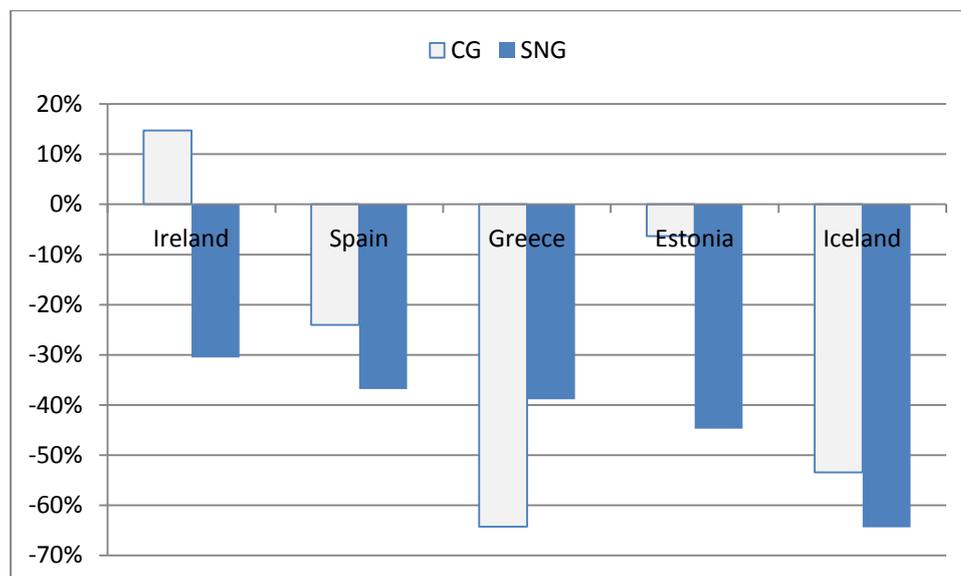


Source: OECD National Accounts

### *Adjustment of public investment in countries severely affected by the crisis*

21. General trends in public investment hide large disparities between countries: the more severe the economic difficulties faced by the countries, the more their public investment has fallen. The five countries in which the unemployment rate increased by more than five percentage points over the 2007-2011 period (Estonia, Greece, Iceland, Ireland, and Spain) saw the greatest decline (Figure 14). In these countries, total GFCF sank by 44%, CG investment by 30% and SNG by 43% on average during the 2007-2010 period. This creates a vicious circle whereby the decline in public investment reduces changes of employment in the future.

**Figure 14. Changes in per capita public GFCF in selected countries (2007-2010)**



Source: OECD National Accounts

## Conclusion

22. The 2008-09 crises and the austerity packages that followed have deeply affected public investment in many OECD countries. Because fiscal situations have deteriorated over the last few years, both central and sub-national governments have committed to achieve more sustainable levels of debt. After initially supporting SNG finances and public investment during stimulus packages, CGs are now cutting public investment and support to SNGs (who are responsible for two thirds of public investment in OECD countries).

23. In such a context, public investment was used as an adjustment variable, both by central and sub-national governments, especially in countries most severely hit by the crisis. The crisis is not over yet, and because some consolidation strategies explicitly plan for reductions in public investment in the medium term, it is likely that these trends will continue over the years to come. In a fragile economic environment, fears that more cuts in public investment could further inhibit growth have led to the present debate about excluding public investment from deficit calculations.

24. The reduced financial capacity of both central and sub-national governments for public investment makes the prioritization and effectiveness of public investment all the more crucial. OECD analyses point out that infrastructure investment alone has little impact on regional growth unless it is associated with investments in human capital and innovation (OECD, 2009). Therefore, synergies among sectors and co-ordination between levels of government are crucial to achieve long-term results on employment and inclusive growth.

25. Future OECD work on *“Investing Together Across Levels of Government: Meeting the Co-ordination and Capacity Challenges”* and *“Financing Investment for Growth in a Tight Fiscal Environment: A Sub-National Perspective”* will complement this paper and will examine in particular: the financial capacity of SNGs for public investment, the role of the supra-national level in financing public investment, the multiplier effect of public investment on private investment, the drivers of the relative share of SNGs in public investment.

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## ANNEX 1: NOTES ON DATA

**Figure 1:** Data for Chile is missing. Data is also missing for Japan (1995-2004), Mexico (1995-2002), Turkey (1995-2005). In 2010: no data for Australia, Israel, Korea, New Zealand; in 2011: idem for Australia, France, Ireland, Israel, Japan, Korea, Mexico, New Zealand, Switzerland, Turkey, the US.

**Figure 2:** Data for Chile is missing. Data is also missing for Ireland (1995-1999), Japan (1995-2004), Mexico (1995-2002), Turkey (1995-2005). In 2010: no data for Australia, Israel, Korea, New Zealand; in 2011: Australia, France, Ireland, Israel, Japan, Korea, Mexico, New Zealand, Switzerland, Turkey, the US.

Public investment per capita in 2011 was calculated by using the 2010 population. For Belgium, France, Germany, Greece, Italy, Japan, Luxembourg, the Netherlands, Portugal and Turkey, Public investment per capita in 2010 and/or 2011 was calculated by using the 2009 population figure.

Countries above the OECD GDP per capita average include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, the UK, the US. Countries under the GDP per capita OECD average include: Czech Republic, Estonia, Greece, Hungary, Israel, Korea, Mexico, New Zealand, Poland, Portugal, Slovak Republic, Slovenia, Spain, Turkey.

**Figure 3:** data for 2010 is missing for Australia, Israel and New Zealand; for 2011, for Australia, Canada, France, Iceland, Ireland, Israel, Japan, Korea, Mexico, New Zealand, Switzerland, Turkey, the US.

**Figure 4:** Data for Chile is missing. Data is also missing for Japan (1995-2004), Mexico (1995-2002), Turkey (1995-2005). In 2010: no data for Australia, Israel, Korea, New Zealand; in 2011: idem for Australia, France, Ireland, Israel, Japan, Korea, Mexico, New Zealand, Switzerland, Turkey, the US.

**Figure 6 :** Data for Chile is missing. Data is also missing for Japan (1995-2004), Mexico (1995-2002), Turkey (1995-2005). In 2010: no data for Australia, Israel, Korea, New Zealand; in 2011: idem for Australia, France, Ireland, Israel, Japan, Korea, Mexico, New Zealand, Switzerland, Turkey, the US.

**Figure 7:** Data for Chile is missing. Data is also missing for Japan (1995-2004), Mexico (1995-2002), Turkey (1995-2005). In 2010: no data for Australia, Israel, Korea, New Zealand; in 2011: idem for Australia, France, Ireland, Israel, Japan, Korea, Mexico, New Zealand, Switzerland, Turkey, the US.

Federations include: Australia, Belgium, Canada, Spain, Switzerland, the US. Centralized countries include: Estonia, Greece, New Zealand, Portugal, Turkey.

**Figure 8:** Australia, Korea, New Zealand: 2009 instead of 2011. Canada, Israel, Mexico, Switzerland, Turkey, the US: 2010 instead of 2011.

**Figure 9:** Hungary: 1996 instead of 1995; New Zealand: 2009 instead of 2010.

**Figure 10:** Australia, Korea, New Zealand: 2009 instead of 2011. Canada, Israel, Mexico, Switzerland, Turkey, the US: 2010 instead of 2011.

**Figure 11:** data for Chile is missing. Public investment per capita in 2011 was calculated by using the 2010 population. For Belgium, France, Germany, Greece, Italy, Japan, Luxembourg, the Netherlands,

Portugal and Turkey, Public investment per capita in 2010 and/or 2011 was calculated by using the 2009 population figure.

**Figure 12:** For, Canada, France, Ireland, Japan, Switzerland, Turkey and the US, data is for 2008-2010 instead of 2009-2011.

**Figure 13 :** Korea: 2009 instead of 2010 ; France : 2007 instead of 2010.

**Figure 14:** Ireland: 2010 instead of 2011.