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Economic resilience: what role for policies?

Aida Caldera Sánchez,
Morten Rasmussen,
Oliver Röhn

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Abstract/Resume

Economic Resilience: What Role for Policies?

The global financial crisis highlighted the importance of strengthening the resilience of our economies to adverse shocks. In this paper, we take stock of studies carried out primarily within, but also outside the OECD, to better understand the role of macroeconomic and structural policies in spurring or mitigating the vulnerabilities that can lead to costly shocks, as well as the role of policies in mitigating the shock impact and speeding the recovery. Then we offer tentative insights on how policies can be geared to address vulnerabilities early on, mitigate the impact of shocks and speed recoveries, as well as highlight possible trade-offs that exist across policy areas.

JEL classification codes: E32; E44; E51; F47
Keywords: Resilience, vulnerabilities, imbalances, severe recessions, crises.

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Résilience économique: Quel rôle pour les politiques ?

La crise financière mondiale a mis en évidence l'importance de renforcer la résilience de nos économies face aux chocs défavorables. Cet article passe en revue les études réalisées principalement au sein, mais aussi en dehors de l'OCDE, afin de mieux comprendre les liens entre les politiques macroéconomiques et structurelles et les vulnérabilités pouvant entraîner de sévères récessions, ainsi que le rôle des politiques pour atténuer l'impact des chocs et accélérer la reprise. Ensuite, l'article propose quelques pistes de réflexion sur comment les politiques peuvent être adaptées pour répondre mieux aux vulnérabilités, atténuer l'impact des chocs et accélérer la reprise économique, toute en mettant en évidence les arbitrages possibles qui existent entre les domaines politiques.

Classification JEL: E32; E44; E51; F47
Mots clefs:. Résilience, vulnérabilités, déséquilibres, récessions sévères, crises.

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ECONOMIC RESILIENCE: WHAT ROLE FOR POLICIES?

By

Aida Caldera Sánchez, Morten Rasmussen and Oliver Röhn[1]

1. Introduction and key messages

1. Countries are subject to a wide variety of economic shocks, including financial crises, sovereign debt crises, commodity price fluctuations or volatility in the world economy. These shocks can increase risk and uncertainty for households, investors and governments, and when sufficiently large, can trigger crises and throw economies off their growth path and lead to long-lasting periods of stagnation. From a policy perspective it is therefore important to understand the factors that condition a country's resilience to adverse shocks, defined broadly as the capacity to contain potential vulnerabilities and reduce the probability of crises and enhance the capacity of the broader economy to cope with shocks.

2. This paper takes a first pass at reviewing what is known about how policies shape a country's economic resilience to shocks. It takes stock of studies carried out – primarily within, but also outside the OECD, – to better understand the role of macroeconomic and structural policies in spurring or mitigating the vulnerabilities that can lead to costly shocks, as well as the role of policies in mitigating the shock impact and speeding the recovery.

3. The paper reviews work in two distinct areas. A first strand of work has assessed the capacity of an economy to resist to shocks and recover quickly (e.g. de Serres and Drew, 2004; Duval et al., 2007; Sutherland and Hoeller, 2013). This work defined a resilient economy as one that better withstands an adverse shock and returns back faster to the pre-shock trend growth rate (i.e. minimising the cumulative GDP loss relative to potential output). It investigated how structural policy settings – notably product market regulations and labour market institutions – impact on resilience by interacting with the transmission of shocks as well as by affecting their amplification and persistence. A second strand of OECD work has examined the influence of structural policy settings on a country's risk of suffering a banking crisis (Ahrend and Goujard, 2012a,b; 2011). This is part of a large literature assessing the type of vulnerabilities (or "early warnings") that make countries more likely to be hit by costly events or crises, such as currency, banking and debt crises (e.g. Frankel and Rose, 1996; Kaminsky et al., 1998). These are vast areas of research and the literature review conducted in this paper is necessarily selective.

4. A number of key messages emerge from this literature review:

- Policies can help to mitigate the build-up of vulnerabilities in the boom phase of the cycle. For instance, macro-prudential regulation can limit banking sector instability and excessive pro-cyclicality. Minimising the distortions in tax policies due to special treatment of housing or the bias towards corporate debt, can help to reduce the risk of asset price bubbles. By addressing vulnerabilities early on policies can also mitigate the costs of future crises. For example, the

1. Aida Caldera Sánchez and Oliver Röhn are members of the Economics Department of the OECD. Morten Rasmussen works for Danmarks Nationalbank. They would like to thank Mikkel Hermansen, Christian Kastrop, Jean-Luc Schneider and Alain de Serres for helpful comments and Caroline Abettan for technical and editorial assistance.

accumulation of fiscal surpluses during boom periods can enable aggressive fiscal stimulus in the event of a major downturn.

- Macroeconomic policies play a key role in mitigating the shock impact and speeding the recovery in the aftermath of a crisis. Expansionary monetary policy helps shorten recessions by boosting demand. Its effectiveness, however, depends on the type of shock. Monetary policy is typically less effective in a financial crisis, when the financial sector is functioning less well and private sector balance sheets are impaired. There also limits about how long expansionary monetary policy can be kept in place to support recoveries, without fuelling additional risks. On the fiscal side, effective countercyclical policy responses require sufficient fiscal space, including low debt and deficit levels combined with a track record of fiscal prudence to borrow at acceptable rates in times of crises.

- Structural policy settings play a key role in enhancing the resilience of economies to shocks through several channels: interacting with macroeconomic policies, affecting the speed of wage and price adjustment, and influencing the reallocation of resources across firms and sectors in response to shocks. For instance, rigid labour market policies, notably overly stringent employment protection, can cushion the impact of adverse shocks, but also slow the recovery by hampering labour reallocation. Active labour market policies can cushion the impact of a shock on the economy by facilitating the retraining of workers and their reallocation to new jobs. Likewise, flexible housing markets can facilitate mobility by allowing workers to move where jobs are available. However, housing markets that respond very quickly to increased demand through greater building activity can lead to cyclical swings. Finally, less restrictive product market regulations can help lower the impact and reduce the persistence of shocks.

- Identifying policy tools to enhance overall resilience is complicated by the existence of trade-offs and interactions in both macroeconomic and structural policy settings. For example, in times of crisis, policies aim to reduce the severity of the downturn and stimulate the recovery, but the policy response to the crisis may have unintended consequences by increasing vulnerabilities down the road. For instance, most OECD countries increased public spending and cut taxes to fight rapidly increasing unemployment during the global financial crisis. The fiscal stimulus increased government debt ratios, which may have raised public sector vulnerabilities, especially in countries with initially high debt ratios. Monetary policy has been extremely loose during the global financial crisis and unconventional tools have been applied in a number of countries to stimulate the slow recovery. The build-up of central banks' balance sheets and the resulting ample liquidity have raised concerns that the policy response is sowing the seeds of a new crisis by creating new vulnerabilities. Moreover, the extensive government bailouts to distressed financial institutions during the crisis, while essential to prevent a financial sector meltdown, may lead to future moral hazard behaviour.

- Policies that may be good for resilience may also face a trade-off with long-term growth objectives. For example, higher ratios of capital to assets within banks can help weather a crisis. However, beyond a certain point, a large storage of capital may hinder growth by limiting the funds available for lending.

5. This paper is part of a stream of work to develop a framework to assess the economic resilience of OECD member countries. In a companion paper, Röhn et al. (2015) discuss the source and nature of potential vulnerabilities in OECD countries that can lead to costly economic crises. Based on the most recent evidence from the early warning literature and lessons learned from the global financial crisis, the paper proposes a new dataset of more than 70 vulnerability indicators that could be monitored to assess country risks in OECD economies. The indicators are grouped into five domestic areas: i) financial sector

imbalances, ii) non-financial sector imbalances, iii) asset market imbalances, iv) public sector imbalances and v) external sector imbalances. An additional international "spillovers, contagion and global risks" category aims at capturing vulnerabilities that could transmit from one country to another through financial, trade or confidence channels. Another companion paper (Hermansen and Röhn, 2015) provides empirical evidence on the usefulness of the set of vulnerability indicators to correctly signal severe recessions while avoiding false alarms. They find that the majority of indicators for which sufficiently long time series exists would have helped to predict severe recessions, as well as crises (banking, currency and sovereign debt crises) in the 34 OECD economies and Latvia between 1970 and 2014.

6. This paper is organised along policy areas. Sections 2 and 3 discuss monetary and fiscal policy respectively. Section 4 focusses on financial market policies. Sections 5 to 8 review the links between structural policies and resilience, including tax policy (Section 5), labour market policies and institutions (Section 6), product market policies (Section 7) and housing policies (Section 8). After each section a table provides an inventory of the selected studies outlining the results, the methodology and the time and country sample. Table 1 in the Appendix provides a synthesis of the literature review of the impact of policies on vulnerabilities, resistance and recovery by policy area.

2. Monetary policy

Monetary policy and the build up of vulnerabilities

7. Accommodative monetary policies, especially when in place for extended periods, have been linked to credit booms and excessive risk taking. Evidence suggests that low policy rates are associated with credit booms in both advanced and emerging economies (e.g. Elekdag and Wu, 2011). Low policy rates bring down lending rates and the costs of borrowing, which could fuel financial imbalances as it boosts asset prices and incentivises risk taking and potentially excessive borrowing. Such imbalances can lead to a misallocation of resources and lower economic efficiency. Moreover, the bursting of credit and asset-price bubbles is often followed by downturns with sharp declines in economic activity (Mishkin, 2011). This begs the question of whether monetary policy should try to pop or slow the growth of possibly developing financial and asset bubbles to mitigate their potential economic costs (e.g. Ahrend et al., 2008; Bayoumi et al., 2014; Sutherland et al., 2010).

8. Whether monetary policy should react to the build-up of credit and asset price bubbles is a long standing debate that is not yet settled (Woodford, 2012; Svensson, 2012a). One view is that monetary policy is not well suited for preventing such imbalances (e.g. Bayoumi, 2014; Bernanke, 2011; Svensson, 2012b). Because of its broad reach, monetary policy is too blunt as it would entail large collateral damage to activity and inflation. These authors argue that the consequences of financial distortions are best addressed through targeted microprudential and macroprudential tools that can reduce incentives for risk taking and help to build buffers *ex ante*. On the other hand, some authors (Mishkin, 2011; White, 2009) argue that with prudential measures being relatively new and untested, especially in advanced economies, the role of monetary policy in "leaning against" the build-up of vulnerabilities cannot be dismissed right away and should be an option to stop the most dangerous imbalances, notably credit bubbles.

9. Using monetary policy to deal with imbalances is not always feasible. For individual members of a monetary union, using monetary policy to fight asset price booms is challenging when asset price cycles are not well synchronised. In small open economies, tightening monetary policy to address imbalances may not be effective because raising interest rates would encourage capital inflows that could fuel a credit boom.

Monetary policy: shock mitigation and recovery

10. Monetary policy is generally viewed as the first line of defence in stabilising the economy during a downturn. The conventional wisdom is that in a typical downturn monetary policy is more effective for demand management purposes than discretionary fiscal policy, as monetary policy does not suffer from implementation lags compared to discretionary fiscal policy. Empirical research does support this conventional wisdom and suggest that monetary policy has been consistently timely and countercyclical during downturns in G7 economies, while fiscal actions have been mostly delayed and procyclical in continental European countries and Japan, but not in Anglo-Saxon countries (See Leigh and Stehn, 2009 and references therein).

11. Empirical evidence further suggests that monetary policy is typically effective. Easy monetary policy during downturns does lead to faster recoveries after "normal" downturns (Bech et al., 2012; Kannan et al., 2009). However, monetary policy is less effective in a financial crisis, when private sector balance sheets and the monetary policy transmission channel are impaired (Borio, 2012; Bech et al., 2012; Kannan et al., 2009). There are at least two reasons why monetary policy is less effective in a financial crisis. First, financial crises are typically characterised by a high share of overly indebted economic agents, who do not wish to borrow in order to spend. Second, a damaged financial system is less effective in transmitting the policy stance to the rest of the economy (e.g. Rawdanowicz et al., 2015). The recent global financial crisis is a good example of how money markets can freeze during a crisis impeding banks short-term financing. Frozen credit markets coupled with weakened banks' balance sheets, impaired the transmission of lower policy rates to bank lending costs. This suggests that during a financial crisis short-term policy rates might need to be sharply reduced and, in some cases accompanied by unconventional monetary policy and discretionary fiscal policy, to effectively boost aggregate demand, as during the global financial crisis.

12. Pursuing a highly accommodative monetary policy over a prolonged period may create vulnerabilities down the road leading to policy trade-offs. During the global financial crisis, unconventional monetary policy measures were justified to prevent the harmful effects of financial system implosion on the real economy (e.g. Borio, 2012; Mishkin, 2009). However, extremely easy monetary policy conditions, and in particular the unprecedented increase in central banks' balance sheets can lead to risks. For instance, protracted monetary policy easing can delay the necessary balance sheet adjustments and prolong economic weakness (e.g. Borio, 2012; Bouis et al., 2013; Borio and Disyatat, 2010). There is also a number of risks related to increased balance sheets, including excessive credit expansion, financial market distortions or sovereign debt management conflicts (Caruana, 2012). And, if monetary policy is not viewed as an adequate tool to pre-empt the build-up of imbalances and bubbles (or "lean against the wind") then the result is an asymmetric stance of policy, with a bias on the side of loosening and associated risks of moral hazard.

Table 1. Empirical evidence on the linkages between monetary policy and resilience

	Vulnerability				Resistance				Recovery			
Policy	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**
Monetary policy interest rates					Monetary policy interest rates have been consistently timely and strongly countercyclical in downturns.	VAR	G7 countries, 1980Q1-2007Q4	Leigh and Stehn (2009)	Easy monetary policy during 'normal' downturns (not financial crisis) lead to stronger recovery.	Cross section regressions	24 developed countries, 1960's-2016	Bech et al. (2012)
					Countercyclical monetary policy shortens recessions, but its effectiveness is limited in financial crises.	Duration analysis	21 OECD countries, 1960–2007	Kannan et al. (2009)	Reductions in nominal and real interest rates beyond that implied by the Taylor rule strengthen economic recovery.	Duration analysis	21 OECD countries, 1960–2007	Kannan et al. (2009)
Central bank balance sheets	**Financial sector imbalances**: Vulnerability to international bank balance sheet shocks is lower when abundant global liquidity is provided by central banks.	Panel regressions	184 developed and developing economies, 1970-2009	Ahrend and Goujard (2012a)	Central banks' asset purchase programmes compressing the long-term yield spread are powerful on output growth and inflation when the short interest rate is constrained by the zero lower bound.	Bayesian time-varying parameter structural VAR	4 countries, 2007-2009	Baumeister and Benati (2010)				
					Exogenous increases in central bank balance sheets at the zero lower bound lead to temporary rise in economic activity and consumer prices.	Panel VAR	8 countries, January 2008-June 2011	Gambacorta et al. (2014)				
					Real growth in the broad money base is a powerful tool for recovery in industrial countries, but not in developing countries.	Panel regressions	197 countries, 1960-2005	Cerra et al. (2008)				
Exchange rate regime	**Financial sector imbalances**: No evidence that fixed, floating or intermediate exchange rate regimes are more prone to systemic banking crises, when countries are hit by bank balance sheet shocks.	Panel regressions	184 developed and developing economies, 1970 to 2009	Ahrend and Goujard (2012a)	A floating exchange rate regime facilitates a quicker rebound from recessions than fixed and intermediate exchange rate regimes, even when it is not the best regime for long-term growth.	Panel regressions	197 countries, 1960-2005	Cerra et al. (2008)				
	External sector imbalances: Being in a currency union does not lower the probability of a sudden stop or a current account reversal. Countries in a currency union have suffered more from external shocks than flexible exchange rate countries.	Panel regressions	157 countries, 1970-2001	Edwards (2006)								

Note: All the mentioned effects are statistically significant if not otherwise mentioned. The grey-shaded boxes indicate OECD-work.

3. Fiscal policy

Fiscal policy frameworks to reduce vulnerabilities

13. Medium-term fiscal frameworks including well-designed fiscal rules can assist fiscal policy in becoming more sustainable, transparent, predictable and counter-cyclical (Pain and Roehn, 2011; Sutherland and Hoeller, 2013) and hence reduce the build-up of public sector vulnerabilities. In particular, medium-term expenditure rules offer a way of limiting boom-bust spending cycles by setting a multi-year plan or ceiling for government expenditure and ensuring that stronger than expected revenues are saved rather than spent. And, by building up reserves during expansionary phases of the cycle, expenditure rules can help to create room for discretionary stimulus and the unconstrained functioning of automatic stabilisers in a downturn.

14. Establishing an independent fiscal council (IFC) can be an important means of strengthening the compliance with announced fiscal targets and help depoliticising fiscal policy (Hagemann, 2011; Alesina and Giavazzi, 2013). By fostering accountability, fiscal councils can encourage policymakers to deliver more viable and more countercyclical policies (Debrun et al., 2012). The number of countries setting up fiscal councils has been growing over recent years following OECD and other institutions advice.

15. Fiscal frameworks can also make fiscal policy decisions more robust to budgetary uncertainty. For instance, asset price related tax revenue surprises have been an important source of bias in the assessment of structural budget balances and may have contributed to fuelling unsustainable booms (Roehn et al. 2015). Recent OECD work shows possible ways to adjust the budget balances for asset-price cycles (Price and Dang, 2011). Beyond this, uncertainties about the cyclically-adjusted budget balance can also arise from a range of other sources, such as uncertainty about the output gap and revisions to revenue and spending items. These uncertainties should be explicitly taken into account in the budget process. And with public finances in many countries now exposed to contingent liabilities arising from guarantees extended to the financial sector, regular stress-testing of government deficit and debt positions would be warranted.

Fiscal policy: shock mitigation and recovery

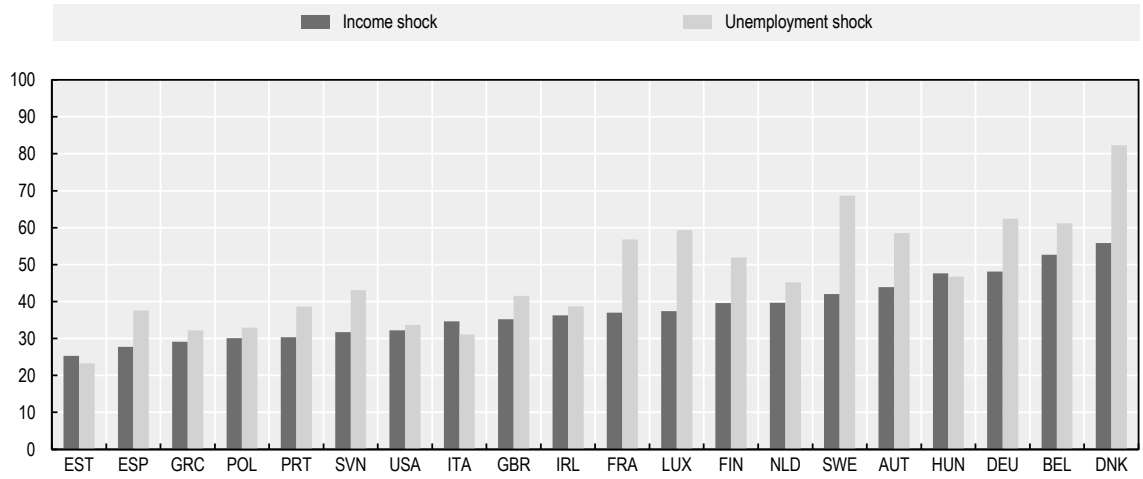
16. Fiscal policy can contribute to mitigate a downturn through two main channels (Debrun and Kapoor, 2010). First, fiscal policy mitigates shocks without any deliberate action through the so-called automatic stabilisers, which arise from parts of the fiscal system that naturally vary with changes in economic activity, most notably unemployment related expenditure. Second, through discretionary fiscal policy governments can deliberately adjust government spending, taxes or transfers to stimulate aggregate demand and mitigate a downturn.

Automatic stabilisers

17. Empirical evidence has indeed shown that automatic stabilisers help smooth output fluctuations, though their effectiveness varies across countries depending on their strength (Debrun and Kapoor, 2010; In ‘t Veld et al., 2012). The strength of the automatic stabilisers depends on several factors including the size of the public sector, the cyclicality of the tax base, the design of the public social security system, and the progressivity of the tax system (e.g. In ‘t Veld et al., 2012; van den Noord, 2000). Among OECD economies, automatic stabilisers tend to be particularly strong in Denmark, Belgium or Germany (Figure 1).

Figure 1. Automatic stabilisers cushion households' disposable income from shocks

Percentage of shock absorbed by tax benefit system



Note: The size of the automatic stabilisers is a measure of the implicit insurance on disposable income by the tax benefit system. The higher the coefficient, the stronger the stabilisation effect. For instance a coefficient of 40% implies that 40% of a shock to gross income (unemployment) is absorbed by the public budget and only 60% of the shock is transmitted into disposable income. The income changes are simulated based on EUROMOD (EU countries) and TAXSIM (United States). The income shock is simulated by a proportional decrease in gross income by 5% for all households, whereas the unemployment shock is simulated by an increase in the unemployment rate corresponding to a decrease in total household income by 5%.

Source: Dolls et al. (2012).

18. Relying on automatic stabilisers as the only channel of fiscal stabilisation in a downturn has limits and drawbacks. First, automatic stabilisers may be insufficient in the case of acute recessions, or when other policy instruments or consumption smoothing opportunities are constrained (e.g. Debrun and Kapoor, 2010; Sutherland et al., 2010). Second, even if automatic stabilisers could be strengthened to play a more substantial role in smoothing the cycle in countries where they are relatively small, however, to the extent that the effectiveness of the stabilisers increases with the size of the public sector and the level of taxation there is a potential trade-off between increasing macroeconomic stability and boosting economic efficiency (Debrun and Kapoor, 2010; Blanchard et al., 2010).

19. Automatic stabilisers can nonetheless be enhanced to mitigate the negative impacts of downturns without hurting economic efficiency by making them more contingent on the state of the economy (e.g. Sutherland and Hoeller, 2013). There are several policies for doing so. One option is to link the generosity of unemployment insurance schemes to unemployment rates or other labour market conditions, so they become more generous when unemployment is high, as is done in Canada and Israel (Fall et al., 2014). Another option is to automatically link spending on active labour market policies to labour market conditions, as is done in Australia, Denmark and Switzerland (OECD, 2009b). A third option is to have short-time working schemes in place ready to be activated quickly when needed, as it was done during the global financial crisis in Germany and Austria. The general principle is to have programmes allowing for a timely adjustment in times of crisis, but also with sufficient built-in withdrawal mechanisms or incentives to minimise the risks that they maintain resources in non-viable or low-productivity firms or sectors and hurt growth in the long run.

Discretionary fiscal policy

20. The second channel through which fiscal policy can be used to mitigate downturns is via discretionary fiscal policy. For normal economic downturns there is a broad consensus that monetary policy and automatic stabilisers should be the first line of defence rather than discretionary fiscal policy (Blanchard and Leigh, 2013; Cottarelli et al., 2014). There are a number of reasons for this. Evidence suggests that fiscal multipliers are typically positive, but small, and there is even some evidence of negative fiscal multipliers (Blanchard and Leigh, 2013; OECD, 2009a). Moreover, lags in the design and implementation of discretionary fiscal policy, together with the short length of recessions typically means that fiscal measures come too late: providing stimulus during the recovery rather than in the downturn. Finally, there is also a concern that policymakers may respond in an asymmetric manner, easing fiscal policy in downturns and not tightening sufficiently in upturns, implying a permanent increase in the public debt-to-GDP-ratio with potentially adverse consequences for fiscal sustainability and long term growth.

21. Discretionary fiscal policy may, however, be appropriate under special circumstances (Box 1). Fiscal multipliers are larger when monetary policy is constrained by the zero lower bound (ZLB) on nominal interest rates (Coenen et al., 2012; Blanchard and Leigh, 2013), the channels of monetary policy are impeded by a weak financial sector (Corsetti et al., 2012), or the economy is in a recession (Auerbach and Gorodnichenko, 2012).

Box 1. Effective discretionary policy: What does recent evidence tell us?

A new wave of research on the size of fiscal multipliers triggered by the financial crisis suggests that, under "special" circumstances, discretionary fiscal policy can have powerful effects on the economy in the short run (e.g. Alesina and Giavazzi, 2013; Blanchard and Leigh, 2013; Minseshima et al., 2014; Sutherland et al., 2010). A number of lessons can be drawn from this new wave of research:

- **Initial fiscal space**: The scope for fiscal stimulus depends on the initial fiscal space a government has available for new spending or tax cuts. Low government debt levels and sustainable public finances provide room for fiscal policy to address large adverse shocks (Sutherland et al., 2010).

- **Size of automatic stabilisers:** Automatic stabilisers tend to dampen the effect of discretionary fiscal stimulus through the growth channel: a fiscal stimulus increases growth, which leads to higher taxes and lower transfers, hence reducing the fiscal multiplier (Mineshima et al., 2014).

- **Trade openness of an economy**: The more open an economy is, the less it will benefit from the domestic demand expansion as the expansion will "leak out" through higher imports (Spilimbergo et al., 2008; Sutherland et al., 2010). OECD evidence indeed suggests that fiscal multipliers are smaller for more open economies reflecting import leakage (OECD, 2009a).

- **The exchange rate regime**: A country with a flexible exchange rate regime tends to have smaller fiscal multipliers than a country with a fixed regime because of the different monetary policy responses to a fiscal expansion (Mineshima et al., 2014). Under a *flexible* exchange rate regime, if the central bank does not change its monetary policy stance in response to a fiscal expansion, output will increase, interest rates will raise and foreign capital will flow in. This will result in an appreciation of the real exchange rate and a reduction of net exports (leakages). By contrast, under a *fixed* exchange rate regime, the central bank would have to expand the money supply to mitigate the appreciation pressures, resulting in a new equilibrium with larger output and unchanged interest rates.

- **The monetary policy stance**: Ideally, the fiscal position should complement monetary policy, so that the two main tools of macroeconomic stabilisation work together and not in opposite directions. The efficacy of discretionary fiscal policy increases if monetary policy is accommodative during a temporary fiscal expansion (Cottarelli et al., 2014). In particular, when interest rates are constrained by the zero lower bound, discretionary fiscal policy can be highly effective as a stabilisation tool (Coenen et al., 2012; Blanchard and Leigh, 2013).

- **Medium term fiscal sustainability concerns:** The scope for expansionary fiscal policy may be limited when long-run fiscal constraints are significant. An increase in government spending (or tax cuts) in countries with high debt levels may act as a signal that fiscal tightening will be required in the near future. The anticipation of such adjustment could have a contractionary effect – through for instance adverse effects on financial markets, interest rates and/or consumer spending – that would offset short term expansionary effects. OECD evidence indeed suggests that Ricardian behaviour, implying that fiscal stimulus is offset by an increase in private sector savings, is likely to be stronger when governments are highly indebted (Roehn, 2010).

- **Development of the economy**: fiscal multipliers tend to be smaller in emerging economies than in advanced economies (IMF, 2008 and Ilzeztzki et al., 2011). This could be due to credibility issues, especially related to debt concerns, triggering an adverse interest rate response that would offset fiscal stimulus.

- **Fiscal stimulus timeliness**: For stimulus spending to affect the economy during a downturn, policymakers have to be quick to identify the downturn and to approve additional stimulus spending. Projects must be able to be implemented quickly ("shovel-ready") not requiring significant planning, research, and development. Stimulus that comes too late will not help support economic activity in the near term, and it could be destabilising if it comes at a time when growth is already improving. Finally, any stimulus should be explicitly temporary to avoid overheating and a ratcheting up of debt.

- **Fiscal stimulus package design**: Under normal circumstances, the largest short-run impact on aggregate demand is likely to come from government spending measures rather than those related to transfers or tax cuts (e.g. Mineshima et al., 2014). This is largely because spending measures have a direct impact on aggregate demand while revenue measures only impact demand indirectly. Among spending measures, OECD evidence suggests public investment is the most powerful instrument, as there is no offset of public investment via private agents' saving (Roehn, 2010).

- **The state of the economy**: Auerbach and Gorodnichenko (2012) find that fiscal multipliers are larger in downturns than in expansions. This is partly because during a recession government spending is less likely to cause an increase in the interest rate and crowd-out private consumption and investment. In addition, the proportion of liquidity constrained households and firms grows during recessions (Gali et al., 2007).

Fiscal frameworks:

22. Fiscal frameworks that keep public finances on a sustainable path and hence reduce vulnerabilities can create more fiscal space in good times to be able to react to large adverse negative shocks. The failure to attain sound public finances in the run-up to the crisis constrained the fiscal response in several countries during the crisis (Pain and Roehn, 2011). It also created strong pressures to consolidate during the downturn risking delaying and slowing the recovery.

23. Fiscal rules need to strike a balance between being sufficiently binding to be useful and sufficiently flexible in unusual times, without compromising credibility (Pain and Roehn, 2011; Schick, 2010). Simple balanced-budget rules that force governments to cut spending when revenues fall during a downturn can be destabilising. Similarly, excessively-rigid expenditure rules might inhibit necessary discretionary stimulus in severe downturns. And simply suspending fiscal rules at times of crisis, as many countries have done, has potentially lasting adverse consequences for their credibility. If credibility is to be underpinned, it is important to define the conditions under which the fiscal rule can be suspended temporarily.

Table 2. Empirical evidence on the linkages between fiscal policy and resilience

	Vulnerability				Resistance				Recovery			
Policy	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**
Automatic stabilisers	**Non-financial sector imbalances**: Taking both the spending and income side into account the overall size of government (positive correlated with the size of automatic stabilisers) in the economy may reach levels that hinder growth.	Panel regressions	18 OECD countries, 1971-1998	Bassanini and Scarpatta (2001)	The combined effect of expansionary discretionary fiscal policy and automatic stabilisers is powerful for accelerating recovery in industrial countries and non-Sub-Saharan African developing countries.	Panel regressions	197 developed and developing countries, 1960-2005	Cerra et al. (2008)				
					The effectiveness of automatic stabilisers apply with equal strength to a broad set of highly heterogeneous countries.	Panel regressions	49 developed and developing economies, 1970-2006	Debrun and Kapoor (2010)				
Discretionary policies	**External sector imbalances**: An improvement in the government budget balance to GDP improves the current account balance to GDP ratio.	Panel regressions	19 developed and 69 developing countries, 1971–2004	Chinn and Ito (2008)	Fiscal multipliers associated with government spending depend on the business cycle. They fluctuate from being statistically insignificant in normal times and in expansions to being significant positive during recessions.	Regime-switching SVAR models	USA, 1947Q1-2008Q4	Auerbach and Gorodnichenko (2012)	In systemic banking crisis timely countercyclical fiscal measures shorten the crisis with government consumption being more effective than public investments and income tax cuts. Do not hold for countries with limited fiscal space preventing fiscal expansions by funding constraints.	OLS and Ordered Logit regressions	118 banking crises in 99 countries, 1980–2008	Baldacci et al. (2009)
	Financial sector imbalances: Fiscal tightening in a credit boom is not associated with a reduced incidence of credit booms, nor a lower probability of a boom ending badly.	Panel regressions	170 countries, 1960s-2010	Dell' Ariccia et al. (2013)	Discretionary fiscal policy is in general more effective on output under a currency peg than under a flexible exchange rate regime and when there is a financial crisis. High public debt or deficit make fiscal spending have no impact on output.	Panel regressions	17 OECD countries, 1975-2008	Corsetti et al. (2012)	Frontloaded consolidations tend to be more contractionary on GDP relative to smoother consolidations. "Strong" fiscal consolidations are more likely to trigger or extend downturns than "mild" consolidations.	Threshold vector-autoregressive (TVAR) model	5 countries, 1970Q1-2010Q2	Batini et al. (2012)
					Fiscal stimulus is particularly helpful during recessions associated with financial crises.	Duration analysis	21OECD countries, 1960–2007	Kannan et al. (2009)	Increases in government consumption strengthen the recovery.	Duration analysis	21OECD countries, 1960–2007	Kannan et al. (2009)
Public spending	**External sector imbalances**: Higher social spending (in particular on health care) reduces the saving rate (lower precautionary savings) which weakens the current account.	Time-series regressions within an error correction framework	30 OECD countries, 1965-2008	Kerdrain et al. (2010)								

Note: All the mentioned effects are statistically significant if not otherwise mentioned. The grey-shaded boxes indicate OECD-work.

4. Financial market policies

Financial market policies to reduce vulnerabilities

24. Vulnerabilities in the financial sector mainly arise for two reasons: i) underpricing of (measured) risk in boom times can lead to excessive leverage, and maturity and currency mismatches; and ii) the interconnectedness and common exposures of the financial sector can make individual institutions systemically important. Vulnerabilities in the financial sector can spill over to other sectors via credit and asset price booms, capital inflow surges and risks of potential bailouts as described in detail in Roehn et al. (2015). Hence, effective policies to address financial market vulnerabilities have potentially large benefits.

25. Macro-prudential measures are aimed at leaning against systemic threats to financial stability arising for example from excessive credit, leverage and asset price growth. While monetary policy could in principle act to influence these systemic threats via interest and credit channels, it is a blunt tool and potential economic costs of misinterpreting vulnerabilities and mistiming interventions are likely higher compared to more targeted macro-prudential tools. The macro-prudential tool box is vast. For example, to counter excessive credit growth and leverage several measures can be applied: countercyclical capital buffers, dynamic provisioning, caps on loan-to-value (LTV) and debt-to-income (DTI) ratios, and increasing risk weights on particular asset exposures. To address increasing maturity mismatch and liquidity risk the following can be used: time-varying liquidity buffers and haircut or margin requirements as well as limits to loan-to-deposit ratios.

26. Experience with macro-prudential tools is still limited and mostly confined to emerging economies, but some evidence on their beneficial effects has started to emerge. For example, limits on DTI and LTV ratios are associated with lower credit growth (IMF, 2012) and higher LTV ratios are found to slow house price inflation and contain feedbacks between assets prices and credit (e.g. Claessens, 2014; Crowe et al., 2013). Conditional on a housing bust, the presence of a LTV cap is found to limit the vulnerability of banking systems to mortgage default (Hong Kong Monetary Authority, 2011). In addition, Claessens et al. (2013) show that caps on DTI and LTV ratios and limits on credit growth and foreign currency lending are effective in reducing leverage, asset and non-core to core liabilities growth during boom times. Countercyclical buffers (such as reserve requirements, limits on profit distribution, and dynamic provisioning) also help mitigate increases in bank leverage and assets.[2]

27. Despite this encouraging evidence about their effectiveness, macro-prudential tools face implementation challenges in practice. Given that macro-prudential policy is primarily aimed at containing systemic risk, it has to be employed pre-emptively before system-wide threats develop. Choosing the right timing to introduce a measure can prove to be difficult and implementation may be resisted by interest groups. Moreover, little is known about how various macro-prudential tools interact and about their interaction with micro-prudential tools, monetary and fiscal policies. International spill-overs may also affect the effectiveness of the tools (Claessens, 2014). Hence, calibrating various instruments so as to take into account their expected costs and benefits as well as interactions with other measures and policies is not straightforward. Another issue is whether measures should be rule-based, or whether discretion should be allowed.

28. Systemically important financial institutions raise particular regulatory challenges. As the size or interconnectedness of these institutions makes them too-big-to-fail (TBTF), they benefit from implicit and explicit public guarantees. This gives rise to moral hazard leading to overly risky lending and adverse feedback loops between sovereigns and banks. Besides threatening financial stability, implicit and explicit subsidies are likely to generate rents and distortions that reduce growth. These rents can be sizeable. For

2. Claessens (2014), OECD (2013a), and Lim et al. (2011) provide examples of country specific experiences with macro-prudential tools.

example, Schich et al. (2014) estimate that public backing reduced the funding costs of a sample of large European banks by 1.3 percentage points in 2013.

29. To reduce *de facto* public support to systemically important financial institutions, too-big-to-fail (TBTF) banks' higher-risk activities could be separated from their systemic utility functions (Blundell-Wignall and Atkinson, 2012)[3] or TBTF banks could be to split into entities sufficiently small that they could go bankrupt without creating systemic risk (Cournède and Denk, 2014a). Second-best regulatory remedies include in particular capital surcharges for TBTF banks, requirements for credible resolution plans (so-called "living wills"), and a wider participation of the private sector in the sharing of losses of insolvent banks. Many OECD countries are currently pursuing reforms along these lines at the national and international level in particular under the auspices of the European Union and the Basel Committee for Banking Supervision (BCBS).

30. Incentive problems in financial sector remuneration systems may lead to excessive risk taking in good times. These problems could be tackled, for instance, by restricting pay that encourages short-sighted risk-taking, such as performance bonuses without claw-back provisions. Recent OECD work (Cournède and Denk, 2014b) further argues that substantial wage premia in the financial sector can hurt growth through misallocation of talent and greater income inequality. Reforms to improve compensation practices in the financial sector are, therefore, unlikely to hurt growth.

31. Risk illusion, i.e. the collective underestimation of risk due to short-term memory and the infrequency of financial crises can be counteracted through limit values on high-risk banking activities. As an example the Basel Committee on Banking Supervision suggests measuring and controlling large exposures with a limit value for large exposures set at 25% of a bank's tier 1 capital (BIS, 2014). Nonetheless, limit values must balance the trade-off between limiting risk taking and allowing banks to carry out profitable banking activities and extend credit.

Financial market policies: shock mitigation and recovery

32. The financial sector often propagates shocks and crises involving the impairment of financial intermediation frequently leading to large economic costs. Hence, prudential tools aim at increasing the shock absorption capacity of the financial sector.

33. Strong capital and liquidity buffers as well as sufficient loan loss provisioning are important ingredients to increase the shock absorption capacity of the financial sector. Large capital buffers reduce the extent to which financial firms can build-up leverage in boom times and increase the distance to default in case of an adverse shock. Furthermore, the global financial crisis has shown that market liquidity can evaporate quickly in the face of a shock. Maintaining a large share of high quality and highly liquid assets is thus important to reduce the risk that financial firms are forced to fire-sell illiquid assets with potential spill-over effects to other financial firms and that liquidity problems turn into solvency problems. The Basel III framework acknowledges the need for higher buffers especially by requiring that banks hold an adequate stock of unencumbered liquid assets and finance at least 3% of their total assets (including off-balance sheet exposures) with equity. However, the OECD has advocated a more prudent leverage ratio of 5% (Blundell-Wignall and Atkinson, 2012; OECD, 2014b). In addition, Blundell-Wignall and Roulet (2013) provide evidence that parts of the Basel III framework that pertain to capital ratios based on risk-weighted assets are less effective at curbing bank credit risk than the leverage ratio.

3. In particular, if the gross market value of derivatives reaches 10% of a banks' portfolio, based on IFRS accounting, then high-risk activities, including prime broking, market-making, underwriting and most derivatives activities be separated into a ring-fenced subsidiary within a Non-Operating Holding Company (NOHC) structure (OECD, 2014a). Large portfolios of derivatives expose banks to high levels of market risk and hence increase banks' risk of insolvency.

Table 3. Empirical evidence on the linkages between financial market policies and resilience

	Vulnerability				Resistance				Recovery			
Policy	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**
Macro-prudential measures	**Financial and non-financial sector imbalances**: Limits on DTI and LTV ratios, credit growth and foreign currency lending are effective in reducing leverage, asset and noncore to core liabilities growth in boom times. Countercyclical buffers (e.g. reserve requirements and dynamic provisioning) help mitigate increases in bank leverage and assets.	GMM panel data regressions	48 countries, 2000-10	Claessens et al. (2013)	Macro-prudential policies are overall ineffective in restorating financial intermediation during adverse conditions. However, a group of policies directed banks (e.g. countercyclical provisioning and capital requirements) helps maintain growth in asset prices.	GMM panel data regressions	48 countries, 2000-10	Claessens et al. (2013)				
	Non-financial and external sector imbalances: Requirements on capital and reserves reduce credit growth. Capital requirements and limits on LTV ratios reduce house price appreciation. In emerging economies increases in reserve requirements limit portfolio inflows.	Panel regressions	36 countries, 2000-11	IMF (2013)								
	Financial sector imbalances: Limits on LTV ratios reduce the vulnerability of banking systems to property price shocks.	Panel regressions	13 countries, 1991Q1-2010Q2	Hong Kong Monetary Authority (2011)								
	Non-financial and financial sector imbalances: Macroprudential tools can reduce the incidence of credit booms and decrease the probability that booms end up badly.	Panel regressions	170 countries, 1960s-2010	Dell'Ariccia et al. (2013)								
Banking supervision	**Asset market imbalances**: Rigorous banking supervision has been associated with lower real house price volatility.	Panel regressions	20 OECD countries, ca. 1980-2005	Andrews et al. (2011)								

Table 3. Empirical evidence on the linkages between financial market policies and resilience (cont.)

	Vulnerability				Resistance				Recovery			
Policy	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**
Implicit guarantees for bank debt	**Financial sector and fiscal imbalances**: Implicit guarantees estimated to give annual funding costs savings equivalent to 50 bn euro in 2013 for 114 large European banks. The value of implicit guarantees has declined from its peak at the height of the financial crisis.	Panel regressions	114 European banks, January 2008- July 2013	Schich et al. (2014)								
Structural financial policies	**Financial sector imbalances**: Stringent domestic capital adequacy requirements for banks, greater reliance of a domestic banking system on deposits, controls on credit market inflows, and openness to foreign bank entry reduce the vulnerability to financial contagion.	Panel regressions	184 developed and developing economies, 1970- 2009	Ahrend and Goujard (2012a)					The marginal propensity to consume out of housing wealth differs across countries and is highest in countries with large, efficient and responsive mortgage markets, including opportunities for housing equity withdrawal.	Error correction models	10 OECD countries, 1975- 2002	Catte et al. (2004)
	Non- financial imbalances: Increased likelihood of recession when private sector debt levels are above trend (particularly household debt). Run- ups in corporate borrowing (in both the financial and to a lesser extent the non- financial sector) tend to increase public sector debt.	Panel regressions	34 OECD countries, 1965- 2005	Sutherland et al. (2012)								
	External sector imbalances: In developing countries financial market deregulation may lower the saving rate and thereby weaken the current account.	Time- series regressions within an error correction framework	117 countries, 1965- 2008	Kerdrain et al. (2010)								

Note: All the mentioned effects are statistically significant if not otherwise mentioned. The grey- shaded boxes indicate OECD- work.

5. Tax policy

Tax distortions contribute to vulnerabilities

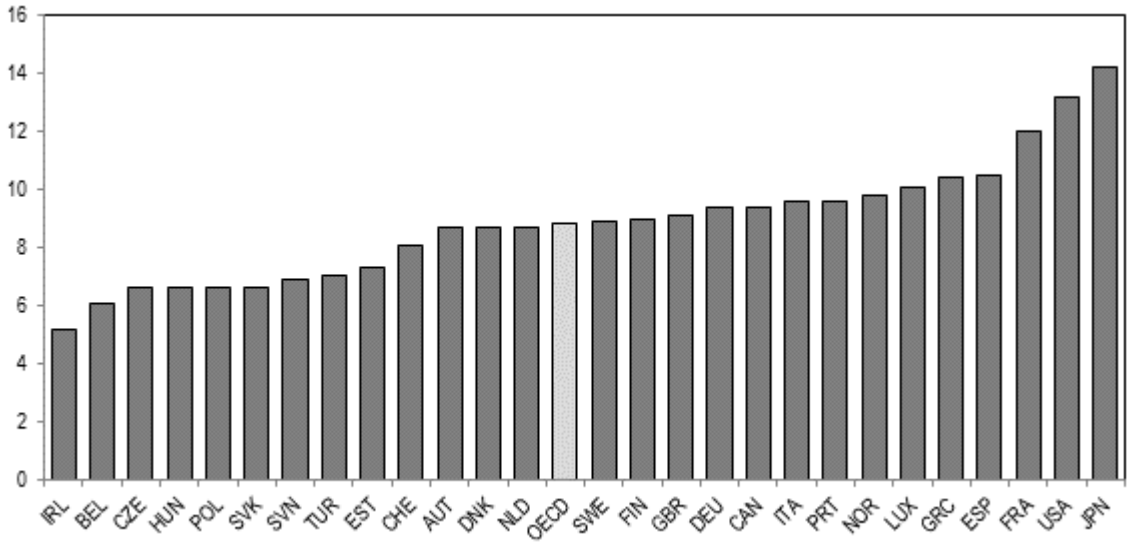
34. The global financial crisis has spurred a debate on whether a number of tax distortions may have contributed indirectly to the crisis by encouraging excessive leverage and other financial market problems (e.g. IMF, 2009; Hemmelgarn and Nicodème, 2010). Three types of distortions are often singled out: a bias towards corporate debt in many tax systems, a favourable tax treatment of housing, and tax preferences for executive compensation packages.

Bias towards corporate debt

35. Corporate tax systems generally encourage debt rather than equity finance in many economies (Figure 2) contributing to creating vulnerabilities in the financial, non-financial and external sectors. The basic mechanism is as follows. Because in most countries interest payments are deductible from the corporate income tax base, while returns on equity (such as dividends paid to shareholders or capital gains on shares) are not, corporate taxes typically create a bias towards debt financing among companies. High levels of leverage can make (financial and non-financial) companies more vulnerable to economic shocks and increase the probability of bankruptcy. Debt financing also provides strong incentives for corporations to increase their risk profile enhancing the possibility of boom and bust periods. OECD work (Ahrend and Goujard, 2012a) has also found that corporate tax systems favouring debt over equity are associated with a higher share of debt in external financing, which contributed to increase the risks of financial crises.

Figure 2. Debt bias of corporate finance in OECD countries

Percentage point difference between the effective tax rates on equity finance and debt finance, 2011



Source: Cournède and Denk (2014b).

Favourable tax treatment of housing

36. Housing is subject to a favourable tax treatment in many countries. Homeowners benefit from tax advantages, compared to other assets. Under a neutral tax treatment, imputed rents and capital gains would be fully taxed and mortgage interest payments would be fully deductible. However, imputed rents and capital gains are seldom taxed (Andrews et al. 2011). On the other hand, a common tax advantage is

mortgage interest tax relief, whereby mortgage interests related to the main residence are often deductible from personal income tax. This generates a bias towards ownership versus renting leading to higher prices and higher debt relative to a neutral tax treatment. For instance, van den Noord (2005) shows that a tax system that subsidises homeownership tends to increase house price volatility. OECD work by Andrews et al. (2011) suggests that in countries having more generous housing tax relief on debt financing costs, a positive demand shock translates into an increase in house prices that is around 50% larger than in the typical OECD country.

Tax preferences for executive compensation

37. Tax policy may distort the level and form of executive compensation. An important part of executive compensation packages comes in the form of performance-related pay (e.g. bonuses, stock options). To the extent that performance-related pay benefits from tax preferences in several OECD countries (OECD, 2012), tax policy may affect the balance between salary and performance-pay in executive compensation packages. As performance-related pay generally increases in value with the riskiness of the actions executives take, at least for stock options, this can lead to higher risk taking.

Tax policy: shock mitigation and recovery

38. Tax systems favouring debt do not only create vulnerabilities but also shape the response of the economy following a shock. A large empirical literature has found that more debt-intensive economic expansions tend to be followed by deeper recessions and slower recoveries (e.g. Dell'Ariccia et al., 2012; Jordà et al., 2013; Sutherland and Hoeller, 2012). As debt represents a non-state contingent liability, debt-service payments are independent of the state of the economy. At high levels of debt, a negative income or revenue shock can squeeze cash flows and force households and firms to cut back on consumption and investment. Similarly, at higher levels of debt, asset price shocks (such as declines in house prices) will have more strongly reduced net wealth. Lower net wealth will translate into lower private spending and also reduce access to borrowing, forcing households and firms to deleverage (see Roehn et al. 2015 for a discussion). If debt and capital overhangs are sizeable, this deleveraging process may depress economic activity for protracted periods.

Table 4. Empirical evidence on the linkages between tax policy and resilience

	Vulnerability				Resistance				Recovery			
Policy	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**
Taxation of corporate debt	**Non-financial imbalances**: A rise in the corporate tax income rate increases the share of debt in external liabilities, and reduces reliance on external equity finance.	Panel regressions	184 developed and developing economies, 1970 to 2009	Ahrend and Goujard (2012a)					The aftermath of leveraged booms is associated with slower output and credit growth and less investment spending than in other recessions.	Panel regressions	14 developed countries, 1870-2008	Jordà et al. (2013)
Tax treatment of housing	**Asset market imbalances**: In countries with more generous housing tax relief on debt financing costs a positive demand shock increases house prices by around 50% more than in the typical OECD country.	Panel regressions	19 OECD countries, ca. 1980-2005	Andrews et al. (2011)	A generous tax relief on debt financing cost appears to amplify house price volatility.	Panel regressions	20 OECD countries, ca. 1980-2005	Andrews et al. (2011)	Variations in housing market wealth have important effects upon consumption implying that a house price bust reduces consumption.	Panel regressions	2 datasets: i) 14 developed countries, various years from 1975 to 1999; ii) US states, 1982-2009	Case and Quigley (2005)
	Asset market imbalances: Higher rates of property taxation can help limit housing booms as well as short-run volatility around an upward trend in prices.	Instrument variable regressions	243 U.S. metropolitan statistical areas, 1998-2007	Crowe et al. (2013)								

Note: All the mentioned effects are statistically significant if not otherwise mentioned. The grey-shaded boxes indicate OECD-work.

6. Labour market policies and institutions

39. Labour market policies and institutions play a role in shaping the way the labour market reacts to shocks in at least two ways (Blanchard, 1999). First, labour market institutions and policies can cushion the impact of shocks, through their effects on earnings and employment. Second, labour market institutions can affect the extent to which higher unemployment persists following an initial cyclical increase.

- *Unemployment insurance:* Generous unemployment benefits, in particular high replacements rates, can mitigate the decline in individual income following adverse macroeconomic shocks. At the same time, high and (particularly) long lasting unemployment benefits can have adverse employment effects and slow the recovery by weakening job-search intensity and lengthening unemployment spells and persistency. At the macro level, there is indeed evidence that generous unemployment benefits increase the persistence of unemployment following an economic downturn (OECD, 2012). Bassanini (2012) further finds that generous unemployment benefits amplify the negative effects of macroeconomic shocks on total labour earnings. Generous benefits would lead to higher unemployment spells putting pressure on employment and wages and negatively impacting earnings.

- *Employment protection legislation (EPL)*: Employment protection can mitigate the impact of adverse shocks on labour income and jobs during downturns by inducing labour hoarding. But overly stringent dismissals regulation can also slow the recovery from adverse shocks by hampering labour reallocation (Bassanini and Duval, 2007). Furthermore, to the extent that employment protection shelters insiders against the risk of a job loss, they can also resist pressures to reduce wages slowing the wage adjustments and possibly the recovery in the face of adverse shocks (Bertola, 1999). The evidence on the role of employment protection legislation on mitigating the impact of shocks and slowing the recovery is mixed. OECD work by Duval et al. (2007) preceding the crisis suggested that tight job protection cushions the impact of a shock on the output gap, but gives rise to greater persistence (takes longer for the output gap to close). On the other hand, recent evidence by Sutherland and Hoeller (2013) including the crisis period suggests that tight employment protection for regular workers does *not* mitigate the impact of shocks on the output gap, while it still gives rise to greater persistency.

- *Wage setting institutions*: Co-ordinated or highly centralised wage-bargaining institutions can mitigate the direct impact of negative output shocks on employment by increasing the responsiveness of real wages and/or working hours to changes in macroeconomic conditions (Blanchard, 1999; Bassanini and Duval, 2006). However, if shocks are heterogeneous across the economy and persistent, adjustment may become more difficult relative to a more decentralised system slowing the adjustment and thus the recovery.

- *Active labour market policies (ALMPs)*: Effective ALMPs can be expected to speed the recovery in the aftermath of an adverse shock by speeding up the re-employment of job losers and improving job matching. The quality of ALMPs is, of course, important and different job-seekers need different types of ALMPs (OECD, 2013b).

- *Minimum wages*: Minimum wages can prevent nominal wages at the lower end of the distribution from bearing the brunt of adjustment to a shock (OECD, 2014c). Yet a high statutory minimum wage can slow wage adjustments in the aftermath of an adverse aggregate shock and slow the recovery. The evidence is, however, inconclusive in this respect. Bassanini (2012) finds that high minimum wages mitigate the impact of macroeconomic shocks on the cyclicality of wages; however, he finds no effect on total earnings and no effect on the persistency of shocks. On the other hand, Ahrend et al. (2011) find that high and, especially, far reaching statutory minimum

wages have had adverse impacts on youth employment and youth unemployment in the wake of numerous macroeconomic shocks.

- *Short-time work schemes (STW)*: Short-time work schemes are public schemes intended to preserve jobs at firms experiencing temporarily low demand by encouraging work-sharing. STW schemes can mitigate the impact of shocks on workers by providing income-support to workers whose hours are reduced and by reducing the inflow of workers into unemployment. On the other hand, if not well-designed they can impede structural change and slow the recovery, especially in the face of a permanent adverse supply shock. Indeed, Hijzen and Martin (2013) find that STW schemes have helped preserve a significant number of jobs during the Great Recession, but its continued use during the recovery slowed the job-content of the recovery. A way to ensure that STW schemes enhance resilience is to shorten their duration and limit their use to downturns.

- *Retirement, long-term sickness and disability schemes*: During downturns when unemployment rises there is strong temptation to facilitate early retirement for older employees and ease access to long-term sickness or disability schemes for employees with health problems in an effort to mitigate the income and unemployment impacts of adverse shocks. Yet these schemes have proved to be particularly damaging in the past. They have undermined long-run labour supply leading to lower potential growth and have permanently increased social expenditures in many countries (OECD, 2009b). In the current crisis, there has not been a massive inflow of unemployed people into early retirement or disability schemes thanks to pre-crisis structural reforms, particularly to disability schemes (i.e. strengthened gate keeping, assessment of health conditions, and incentives to return to work) (OECD, 2014c).

40. Indirectly, labour market institutions can affect the impact of shocks through their effect on wage stickiness or rigidities. In the face of negative shocks, employment adjustment is likely to be larger when wages are rigid downwards, which is often the case, at least for the nominal wages of incumbents (Bassanini, 2012). Labour market institutions — notably wage bargaining and employment protection legislation — are typically considered to explain cross-country differences in wage rigidity patterns (Bertola and Rogerson, 1997; Babecký et al., 2009). For instance, Babecký et al. (2009) find that, in Europe, downward nominal rigidity is stronger in countries with stricter employment protection regulations and a higher degree of collective bargaining coverage.

41. Finally, labour market institutions also influence the recovery from shocks by shaping the pace of job and residential mobility. Low job and residential mobility hamper reallocation and thus reduce the speed of adjustment and recovery from shocks (Blanchard and Katz, 1992). Institutions, such as stringent labour protection, high unemployment benefits, wage co-ordination or weak active labour market policies, are associated with lower labour mobility and employment rates (e.g. Bassanini and Duval (2006) and Blanchard and Wolfers (2000)). Labour market institutions may also play a role on the pace of regional mobility. For instance, evidence suggests that intra-country migration indeed increases following temporary regional shocks in the United States, but not in Europe where unemployment insurance schemes are more comprehensive (Blanchard and Katz, 1992; Decressin and Fatás, 1995).

Targeted employment and social policies to mitigate the impact of shocks on vulnerable workers

42. Severe downturns increase the risks of the unemployed loosing skills and getting discouraged. This risks turning a cyclical increase in unemployment into a permanent increase leading to hysteresis. Some groups of workers, including the low-skilled, the long-term unemployed and the young are more prone to such negative effects and typically need more targeted interventions during a downturn when demand and employment prospects are depressed (OECD, 2009b; 2013b; 2014d).

- *Low-skilled workers*: low-paid workers and their families are likely to suffer more than other groups when wages and/or hours worked fall substantially during a severe downturn. In-work benefit schemes for low-paid workers can help strengthen their labour market attachment and reduce the incidence and severity of in-work poverty. Other options include part-time or partial unemployment benefits for those facing involuntary working-hour reductions.

- *Long-term unemployed*: long-term unemployment can increase substantially after a severe downturn. Well-targeted benefits (e.g. cash benefits, minimum income benefits) can help avert steep rises in poverty and inequality by providing a fall-back option for people no longer receiving unemployment compensation. However, low take-up of such benefits is a common problem in many OECD countries (OECD, 2009b). Take-up can be improved by clearly defining who is legally entitled to assistance, effective information campaigns, one-stop-shops and measures to ensure claimant anonymity.

- *Youth* : the young are strongly affected by economic downturns and it is particularly important to ensure that they do not loose connection with the labour market or experience permanent reductions in their earnings as a result (OECD, 2013c). Temporarily relaxing eligibility requirements for unemployment benefits and targeted ALMPs for young job losers may help if accompanied by requirements to search for jobs. Measures targeted on at-risk youth about to enter the labour market can also help to minimise the risk of youth entering the labour market without any qualifications. Subsidies for internships or apprenticeship programmes may be helpful in this respect.

Table 5. Empirical evidence on the linkages between labour market policies and resilience

	Vulnerability				Resistance				Recovery			
Policy	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**
Employment protection regulation (EPR)	**External sector imbalances**: If unemployment benefits are low stricter EPR is associated with higher investments (due to greater substitution of capital for labour), but lower saving rates. This weakens the current account and increases the reliance on foreign capital.	Time-series regressions within an error correction framework	30 OECD countries, 1965-2008	Kerdrain et al. (2010)	Dismissal regulations mitigate the impact of shocks on earnings and employment. The reduction in the risk of job and earnings losses appears to be largest for workers at the bottom of the earnings distribution.	Panel regressions	23 OECD countries, 23 business-sector industries, 1986-2007	Bassanini (2012)	EPR makes the reallocation of resources across heterogeneous firms less efficiency enhancing (lower correspondence between a firm's size and its productivity level).	Cross-section analysis	21 OECD countries, 2005	Andrews and Cingano (2014)
					Strict EPR does not reduce the amplification of an adverse shock.	Pooled regressions analysis	20 OECD countries, 1985-2012	Sutherland and Hoeller (2013)	Strict EPR is associated with greater output gap persistence.	Pooled regressions analysis	20 OECD countries, 1985-2012	Sutherland and Hoeller (2013)
					Strict EPR appear to reduce the initial impact of an adverse shock.	Pooled regressions analysis	20 OECD countries, 1985-2003	Duval et al. (2007)	Strict EPR is associated with greater output gap persistence.	Pooled regressions analysis	20 OECD countries, 1985-2003	Duval et al. (2007)
					Strict EPR reduces the short-run impact on output of an adverse shock.	Panel regressions	20 OECD countries, 1970-2003	Basanini and Duval (2007)	Strict EPR lengthens the adjustment process.	Panel regressions	20 OECD countries, 1970-2003	Basanini and Duval (2007)
									EPR increases persistency of a crisis.	Panel regressions	33 OECD countries, 1993-2012	Ziemann (2013)
Minimum wages					Minimum wages mitigate the impact of macroeconomic shocks on the cyclicality of hourly wages, but have no significant impact on the transmission of GDP shocks onto total earnings.	Panel regressions	23 OECD countries, 23 business-sector industries, 1986-2007	Bassanini (2012)	Relative employment and unemployment of people in the age 20-29 have been adversely affected by more stringent minimum wage settings in the wake of shocks.	Panel regressions	40 countries, 1960-2010	Ahrend et al. (2011)
Short time work schemes (STW)					STW helps to preserve jobs in a recession by making the number of employed and unemployed less elastic with respect to output while still raising hours flexibility.	Panel regressions	23 OECD countries, 2004Q1-2010 Q4	Hijzen and Martin (2013)	The continued use of STW during the recovery 2009-10 may have slowed the job-content of the recovery.	Panel regressions	23 OECD countries, 2004Q1-2010 Q4	Hijzen and Martin (2013)

Table 5. Empirical evidence on the linkages between labour market policies and resilience (cont.)

	Vulnerability				Resistance				Recovery			
Policy	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**
Bargaining system					Higher union density and less wage coordination between union and employers lead to a larger effect of shocks on unemployment.	Panel regressions	20 countries, 1960-1996	Blanchard and Wolfers (2000)	In the aftermath of shocks stronger union coverage typically improves the labour market performance of prime-age groups to the detriment of youths.	Panel regressions	40 countries, 1960-2010	Ahrend et al. (2011)
									The coverage of collective bargaining agreements is increasing the persistence of a shock.	Pooled regressions analysis	20 OECD countries, 1985-2012	Sutherland and Hoeller (2013)
									Higher collective bargaining coverage increases shock persistence	Panel regression	20 OECD countries, 1982-2003	Basanini and Duval (2006)
Unemploy-ment benefit systems					In the aftermath of financial crises and fiscal adjustments, larger social transfers and higher replacement rates (especially in the first year) dampen the income effect on households.	Panel regressions	40 countries, 1960-2010	Ahrend et al. (2011)				
					High unemployment benefits amplify the unemployment effects of adverse shocks.	Panel regressions	20 OECD countries, 1982-2003	Basanini and Duval (2006)				
					Higher replacement rates and longer duration of unemployment benefits lead to a larger impact of shocks on unemployment.	Panel regressions	20 countries, 1960-1996	Blanchard and Wolfers (2000)				
Active labour market policy (ALMP)					A higher degree of ALMP reduces the effects of adverse shocks on unemployment.	Panel regressions	20 countries, 1960-1996	Blanchard and Wolfers (2000)	High expenditures on ALMP reduces the persistence of shocks.	Panel regressions	20 OECD countries, 1982-2003	Basanini and Duval (2006)

Note: All the mentioned effects are statistically significant if not otherwise mentioned. The grey-shaded boxes indicate OECD-work.

7. Product market regulations

43. Recent OECD evidence suggests that pro-competitive product market regulations strengthen resilience by lowering the impact and reducing the persistence of shocks. For instance, Sutherland and Hoeller (2013) find that lower state control is correlated with lower amplification and persistence of shocks on output gaps. Persistence and to a lesser extent amplification of shocks is also less pronounced in economies with less regulated network industries. Analysis by Ziemann (2013), further suggests that fewer barriers to entrepreneurship are associated with lower macroeconomic volatility and smaller output falls during downturns.

44. Disentangling the exact channel through which pro-competitive product market regulations enhance resilience is, however, not obvious. Several channels can be distinguished:

- ***Price and wage flexibility channel*:** Product market reforms that increase competition among firms can also improve the adjustment capacity to adverse macroeconomic shocks by promoting nominal price and wage flexibility, through for instance reducing the oligopolistic behaviour of firms and disciplining mark-ups (Canova et al., 2012). For instance, Geroski (1992) shows that price responses to both supply and demand shocks are faster in more competitive industries. Álvarez and Hernando (2006) further show that product market regulations that restrict competition reduce price flexibility and that in more competitive markets firms adjust prices faster in response to demand and supply shocks. Higher competition then leads to a more rapid adjustment in prices, which would underpin household disposable income and give monetary policy more leeway to respond in a downturn. Furthermore, more flexible product markets will tend to improve the functioning of the labour market through speeding the pace of adjustment (Bassanini and Duval, 2006).

- ***Reallocation channel***: By facilitating entry and exit, pro-competitive product market regulations may smoothen the impact and speed up the recovery from shocks by enabling a quicker and more efficient reallocation of resources within and across sectors and firms. Such reallocation can lead to higher productivity and growth, if less productive firms exit the market and more productive firms remain, the so-called “cleansing effect” of recessions (e.g. Caballero and Hammour, 1996). On the other hand, it might be the case that a surge in job destruction is not matched by an increase in job creation, if the crisis reduces the availability of finance for entrepreneurs (Caballero and Hammour, 2005) and the scope for experimentation (Ziebarth, 2012).

- ***Innovation channel***: Finally, pro-competitive product market regulations may also contribute to speed up the recovery by giving firms stronger incentives to innovate when faced by a shock, other things equal. There is indeed some evidence that innovating firms are much less sensitive to cyclical shocks than non-innovating firms, at least in the UK (e.g. Geroski and Machin, 1993). This could be explained by an increased demand for innovative products that offer lower prices and/or respond better to altered demand during a downturn. The role of bankruptcy regimes on mitigating the impact of shocks and speeding the recovery.

45. Downturns typically lead to liquidity and insolvency problems among businesses, as firms face declining demand, leading to an increase in corporate and bank failures. A wave of defaults can overwhelm the judicial system, exacerbating value-destroying delays (Ghosh et al., 2009). Inefficient bankruptcy systems that excessively punish business failure, through for instance a costly bankruptcy procedure, can hamper the efficient reallocation of resources by raising the likelihood that resources are trapped in inefficient firms (e.g. Andrews and Cingano, 2014). As such inefficient bankruptcy regimes can hamper reallocation and thereby amplify the impact of shocks and slow the recovery. According to (Djankov, 2009) the efficiency of bankruptcy processes in dealing with crises can be improved by i) minimising dependence on the courts; ii) establishing specialise courts; iii) limiting appeals iv) introducing time limits and v) using the internet to post decisions and publicise auctions.

Table 6. Empirical evidence on the linkages between product market regulations and resilience

	Vulnerability				Resistance				Recovery			
Policy	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**	**Results**	**Method**	**Sample**	**Study**
Regulation on entrepre-neurship, investment and trade	**Non-financial imbalances**: Anti-competitive domestic PMR and regulatory barriers to FDI and equity investment result in increased bias of external liabilities towards debt, driven by increases in external debt liabilities and decreases in equity and FDI liabilities.	Panel regressions	184 developed and developing economies, 1970-2009	Ahrend and Goujard (2012a)	Innovating firms are less sensitive to cyclical shocks than non-innovating firms.	Panel regressions	UK, 539 firms, 1945-83	Geroski and Machin (1993)	Countries with high barriers (entry and exit) in the product market have lower covariance between firm size and their productivity (i.e. lower allocative efficiency).	Cross-section analysis	21 OECD countries, 2005	Andrews and Cingano (2014)
	External sector imbalances: PMR liberalisation temporarily boosts investment which temporarily weakens the current account.	Time-series regressions within an error correction framework	30 OECD countries, 1965-2008	Kerdrain et al. (2010)	Low barriers to entrepreneurship are associated with reduced real GDP volatility and amplitudes.	Panel regressions	33 OECD countries, 1993-2012	Ziemann (2013)	PMR generally increases persistence of a crisis.	Panel regressions	33 OECD countries, 1993-2012	Ziemann (2013)
					Lower state control and less regulated network industries are correlated with lower amplification of shocks on output gaps	Pooled regressions analysis	20 OECD countries, 1985-2012	Sutherland and Hoeller (2013)				
					PMR dampen the initial output gap effect of shocks.	Pooled regressions analysis	20 OECD countries, 1985-2003	Duval et al. (2007)				
					Stringent PMR reduces the short-run impact of an adverse shock.	Panel regressions	20 OECD countries, 1970-2003	Basanini and Duval (2007)	Stringent PMR lengthens the adjustment process.	Panel regressions	20 OECD countries, 1970-2003	Basanini and Duval (2007)
Bankruptcy system									Countries with more stringent bankruptcy arrangements have lower covariance between firm size and their productivity (i.e. lower allocative efficiency).	Cross-section analysis	21 OECD countries, 2005	Andrews and Cingano (2014)

Note: All the mentioned effects are statistically significant if not otherwise mentioned. The grey-shaded boxes indicate OECD-work.

8. Housing market policies

Which policies can best limit the build-up of vulnerabilities in the housing sector?

46. Housing markets are a major source of financial instability and real estate booms and busts can have far reaching consequences, as recent experience has shown (e.g. Crowe et al. 2011). The main risks from housing market booms and busts are linked with increasing leverage both in the household and financial sector. Hence, policies to reduce the risks when housing prices are rapidly increasing need to focus on stemming the growth in house prices, lowering the build-up of debt, reducing risks in the composition of debt and making households and financial institutions more financially robust. On the demand side, monetary policy is one option. However, econometric estimates of interest rate effects on house prices are rather small (e.g. Kuttner, 2011), suggesting that to meaningfully restraint house-price growth interest rates would have to be increased substantially with possible large adverse effects for other sectors of the economy.

47. Macroprudential measures can help to restrain house price booms, however, as discussed in Section 4, the evidence of the effectiveness of macroprudential tools in dampening housing booms is not yet definitive. Given the limited data on the use of macroprudential policies, only a few papers have investigated their effects on housing markets. Using cross-country data on the use of macroprudential policies, Crowe et al. (2013) and Cerruti et al. (2015) find that loan-to-value (LTV) limits have the best chance to curb a real estate boom. On the other hand, Kuttner and Shim (2013), using a different dataset, find that capping the debt-service-to-income (DTI) ratios is more effective than adjusting the maximum loan-to-value ratio to slow credit growth during housing booms. They also find that restrictions targeting specific characteristics of loans have larger effects on mitigating credit growth than increasing capital requirements. A number of papers have investigated countries experiences with one or a few macroprudential policies. Jimenez et al. (2012) using micro-level data for Spain find that dynamic provisioning can help to tame credit supply, although it was not enough to stop the boom. Igan and Kang (2012) find that LTV and DTI limits appear to moderate mortgage credit growth in Korea.

48. House price reactions to demand shocks fundamentally depend on housing supply responses. Supply-side rigidities can prevent housing supply from adjusting in the face of increased demand putting additional pressure on prices. Policy measures aimed at increasing the responsiveness of housing supply — such as streamlining cumbersome construction licensing procedures, designing and enforcing efficient land regulations, providing complimentary infrastructure and other public services or encouraging the use of land through better linking property values for tax purposes to market values — can help to avoid excessive increases and volatility in house prices (Andrews et al., 2011; Caldera and Johansson, 2013). However, the flipside is that in environments with very flexible housing supply, housing investment adjusts more rapidly to large changes in demand contributing to cyclical swings in economic growth (OECD, 2011).

49. A well-functioning and sufficiently large rental market can also help to reduce the pressure on house prices by allowing households to rent when house prices are rising relative to rents (André, 2010). A scarcity of rental housing driven by, for instance, tax systems biased towards homeownership or a tight regulation of rental markets, can lead to a decline in supply of rental accommodation preventing households from renting (Andrews et al., 2011).

Housing policies: shock mitigation and recovery

50. Housing policies also play a role in the adjustment to shocks through their impact on residential and labour mobility. Residential mobility decisions are strongly linked to housing market conditions at the local and national levels, which in turn are shaped by housing market policies. For instance, strict

regulations in rental markets can reduce residential mobility as tenants in rent-controlled dwellings will be reluctant to move if rents are below market levels and tenure security is greater than in the unregulated rental market (e.g. Lind, 2001; Nagy, 1997; Ball, 2009). Overall, evidence by Caldera Sánchez and Andrews (2011) suggests that residential mobility is higher in countries with lower rent controls and tenant protection, lower transaction costs in buying a property, a more responsive housing supply, as well as greater access to credit.

Table 7. Empirical evidence on the linkages between housing market policies and resilience

Policy	Vulnerability Results	Vulnerability Method	Vulnerability Sample	Vulnerability Study	Resistance Results	Resistance Method	Resistance Sample	Resistance Study	Recovery Results	Recovery Method	Recovery Sample	Recovery Study
Housing market policies	**Asset market imbalances**: Less restrictive planning regulations and rules on land use increases the responsiveness of housing supply and the speed of adjustment in the housing markets.	Stock-flow model estimated within an error correction framework	21 OECD countries, 1980s to late-2000's	Caldera Sanchez and Johansson (2013)	Residential (and labour) mobility is higher in countries with lower transaction costs, more responsive housing supply, lower rent controls and tenant protection, and greater access to credit.	Cross country regressions	25 OECD countries, 2007	Caldera Sanchez and Andrews (2011)	Elastic housing supply is associated with bigger housing stock overhangs, making the required adjustment bigger and housing market recovery longer.	Panel regressions	18 developed countries, 1990-2010	Bénétrix et al. (2011)
	Asset market imbalances: Higher housing supply responsiveness and transaction costs reduce real house price variability.	Panel regressions	20 OECD countries, ca. 1980-2005	Andrews et al. (2011)								

Note: All the mentioned effects are statistically significant if not otherwise mentioned. The grey-shaded boxes indicate OECD-work.

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Table A1: Synthesis table on the linkages between policies and the different dimensions of resilience

Policies	Vulnerability	Resistance	Recovery
Monetary			
	Financial sector imbalances: Through the price of credit and balance sheet policies, central banks influence risk-taking and leverage in the financial sector. **Non-financial sector imbalances:** The price of credit affects debt levels of households and firms. **Asset market imbalances:** Through the price of credit central banks can influence the build-up of asset price bubbles	Expansionary monetary policy boosts aggregate demand through e.g. lower interest rates and easier access to credit. Unconventional monetary policy measures can boost aggregate demand when traditional monetary transmission channels are impaired, e.g. because the policy rate is at the zero lower bound or credit markets are frozen.	Expansionary monetary policy shortens recessions through increased demand, but is less effective in a financial crisis, when private sector balance sheets and the monetary policy transmission channel are impaired. Unconventional monetary policy measures can boost aggregate demand when traditional monetary transmission channels are impaired, e.g. because the policy rate is at the zero lower bound or credit markets are frozen. Protracted monetary easing can delay balance sheet adjustments in the private and public sectors slowing the recovery.
Fiscal			
	Public sector imbalances: The fiscal stance influences debt sustainability and solvency risk. **Public sector imbalances:** Fiscal frameworks can assist fiscal policy to become more sustainable, predictable and counter-cyclical and reduce budgetary uncertainty. **External sector imbalances**: Changes in the government budget balance will alter total saving and thereby the current account, reflecting evidence that Ricardian equivalence only holds partially. **External sector imbalances**: Social spending (in particular on health care) affects the saving rate through precautionary savings influencing the current account.	Automatic stabilisers provide timely, targeted and temporary stabilisation. Expenditure rules may help to build up fiscal reserves in boom periods creating more fiscal space in downturns. Discretionary fiscal policy can boost aggregate demand in the short run. Under normal circumstances, the largest short-run impact on aggregate demand is likely to come from government spending measures rather than those related to transfers or tax cuts. Fiscal multipliers are larger when monetary policy is constrained by the zero lower bound on nominal interest rates;, the channels of monetary policy are impeded by a weak financial sector; or the economy is in a recession.	Strong automatic stabilisers (e.g. progressive taxation and long-lasting social benefits) can hurt growth. Discretionary fiscal policy can boost aggregate demand in the short run and strengthen the recovery. Under normal circumstances, the largest short-run impact on aggregate demand is likely to come from government spending measures rather than those related to transfers or tax cuts.
Financial market			
	Financial sector imbalances: Micro- and macroprudential measures (e.g. countercyclical capital buffers) can increase the shock absorption capacity and reduce the pro-cyclicality of the financial sector. Liquidity regulations can reduce excessive maturity mismatch. **Non-financial sector imbalances:** Targeted micro- and macroprudential measures (e.g. debt-to-income ratios) can impose additional lending costs to certain sectors of the economy, reducing credit growth and debt build-up. **Asset market imbalances:** Macroprudential measures (e.g. loan-to-value ratios) can curb excessive leverage and mitigate asset price booms. **Financial and public sector imbalances**: Explicit and implicit public guarantees (e.g. for too-big-to-fail institutions) may induce moral hazard leading to overly risky lending and adverse feedback loops between sovereign and banks.	Regulations to build-up bank capital buffers make banks more robust to shocks, thus facilitating lending. Regulations requiring banks to hold sufficient high quality and liquid assets reduce the risk of fire-sales and that liquidity problems turn into solvency problems.	

Policies	Vulnerability	Resistance	Recovery
Taxation			
	Financial and non-financial sector imbalances: Tax systems with a debt bias increase firms and households (e.g. mortgage interest tax relief) leverage.		Tax systems with a debt bias increase firms' leverage ratios. This can create debt overhang problems delaying the recovery.
	Asset market imbalances: Favourable tax treatment of housing encourages excessive mortgage borrowing fuelling housing price booms.	Subsidising homeownership (e.g. favourable tax treatment) increases house price volatility making a house price bust more severe.	Favourable tax treatment of housing encourages excessive mortgage borrowing. At high levels of household debt, households may be forced to deleverage delaying the recovery.
	Financial sector imbalances: Executive compensation packages including bonuses and stock options that benefit from tax preferences can induce excessive risk taking.		Tax incentives to homeownership increase the share of homeowners. To the extent that homeowners are less likely to migrate than tenants, tax incentives that favour homeownership reduce geographical labour mobility.
Labour market			
	External sector imbalances: Stricter employment protection legislation (EPL) is associated with higher investments (due to greater substitution of capital for labour), but lower saving rates weakening the current account.	Strict ELP cushions the shock impact on unemployment by deterring firms from laying off workers. A large gap in job protection between permanent and temporary workers generates high unemployment turnover and insecurity for temporary workers.	Employment protection provisions whose costs are high hinder hiring and risk increasing unemployment persistence.
			High firing costs slow down the wage adjustment process as well as workers' reallocation towards more productive jobs.
		Minimum wages can prevent nominal wages at the lower end of the distribution from bearing the brunt of adjustment to a shock. However, high and, especially, far reaching statutory minimum wages have had adverse impacts on youth employment and unemployment in the wake of numerous macroeconomic shocks.	High statutory minimum wages can slow wage adjustments in the aftermath of an adverse shock.
			A high degree of centralisation and/or coordination of wage bargaining speeds up wage adjustment to adverse shocks.
			In centralised bargaining systems wage adjustment may be difficult if shocks are persistent and heterogeneous across the economy.
		Short time work schemes (STW) can cushion the impact of output shocks on employment by allowing each employee to work less.	Poorly-designed STW schemes (e.g. too broad and/or stay in place too long) can impede structural change and slow the recovery.
		High replacement rates, broad coverage and long-lasting unemployment benefits mitigate a decline in households' disposable income.	High and long-lasting unemployment benefits can slow the recovery by weakening job-search prolonging unemployment spells and persistency.
			Effective active labour market policies can reduce unemployment persistence by improving job matching and increasing the labour market influence of outsiders on wages.
		Easier access to early retirement, long-term sickness and disability schemes may mitigate the impact of an adverse shock on disposable income.	Once in early retirement, long-term sickness or disability schemes workers are unlikely to re-enter the labour force leading to a permanent fall in labour supply.

Policies	Vulnerability	Resistance	Recovery
Product market			
	External market imbalances: Rigid product market regulations (PMR) impose costs and create barriers to entry making it less attractive and more difficult to invest in a country. This reduces foreign direct investment resulting in an increased bias of external liabilities towards debt. **External sector imbalances:** PMR liberalisation temporarily boosts investment which temporarily weakens the current account.	Lower competition (e.g. via strict product market regulation) creates rents that allow firms to minimise lay-offs in the short run, as they can squeeze mark-ups.	Pro-competitive PMR speeds the economic recovery by enabling a quicker and more efficient reallocation of resources within and across sectors and firms when face by a shock Pro-competitive PMR speeds the economic recovery by strengthening firms incentives to adopt more efficient and flexible production techniques Pro-competitive PMR speeds the economic recovery by strengthening firms' incentives to innovate when faced by a shock.
Bankruptcy system			
			Well-designed bankruptcy systems can foster an efficient reallocation of resources by reducing the likelihood that resources are trapped in inefficient firms.
Housing policies			
	Asset market imbalances: Measures to increase housing supply elasticity reduce excessive price volatility by helping supply to equal demand. However, with very flexible housing supply, housing investments adjust rapidly to changes in demand contributing to GDP volatility.		Housing policies affect residential and labour mobility. For example, excessive rental regulation gives tenants negative incentives to move. Inelastic housing supply increases regional housing price differences making it less affordable to move from a region with low prices to one with high prices.