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An Economic Reform Agenda for Croatia

Specials

Spotlight

Trends

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Editors: John Whalley (jwhalley@uwo.ca) and Chang Woon Nam (nam@ifo.de)
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AN ECONOMIC REFORM AGENDA FOR CROATIA

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An Economic Reform Agenda for Croatia

Introduction

Oliver Falck and
Siegfried Schönherr*

Background of the study

When the Ifo Institute received a request from the Croatian Statehood Foundation to develop an economic and social reform programme for Croatia, it made it clear from the outset that it would keep the study strictly neutral, anchored on sound economic principles and in no way aligned to any existing political party programmes. The only principle Ifo clearly adheres to, as a result of proven theoretical underpinnings and the empirical evidence available, is the conviction that the social market economy (with a strong emphasis on 'social') is the most successful system for achieving and combining economic growth and social welfare. The execution of the study was purposefully conducted in close cooperation with Croatian scholars and specialists, in order to ensure that know-how on relevant local conditions would be properly taken into account.

After several months of research, the study put forth a scientifically sound programme on how Croatia's very serious structural problems can be overcome, condensed into 13 papers dealing in detail with the key issues addressed by the programme. They were published as a book in January 2016.[1] This *Focus* is based on the above book, but further condensing the analyses and recommendations and including further scientific, especially methodological, developments. This publication is not the result of any contractual obligation but of the authors` own scientific interest in disseminating their findings.

* Ifo Institute. We are grateful to Julio Saavedra who carefully edited the papers in this 'Focus'.

[1] Falck, O. and S. Schoenherr (eds., 2016), *An Economic Reform Agenda for Croatia,* ifo Forschungsberichte 70, Munich: Ifo Institute.

Overwhelming challenges for Croatia

Croatia is well into its eighth year of recession and stagnation. Not even accession to the European Union has brought any visible relief. With a very high rate of unemployment, especially among the young, a bloated and inefficient public sector, unaffordable welfare systems and many of its best brains leaving the country, it comes as no surprise that it ranks poorly in a wide array of indicators. Needless to say, business as usual is no longer an option. Any economic reform agenda to bring Croatia out of the slump has to act on a very wide front and tackle a number of overwhelming challenges.

International price comparisons of key export goods reveal that manufacturing in Croatia is more expensive than in its peer countries. Many Croatians try their entrepreneurial zeal in other countries, removing their business skills and even funds from Croatia, a development that can severely dampen the economy's future investment and innovative capacity.

Croatia's labor market participation rate is one of the lowest in Europe, and its unemployment level is nonetheless inordinately high. Worse, more than half of the jobless are long-term unemployed, a rate far higher than in most peer countries. But that is not all: among the young people, the unemployment rate amounts to nearly 50 percent, an outright social disaster.

Croatia's shadow economy lies far above the average of European countries; only Bulgaria and Romania do worse. This, naturally, erodes the tax base, a disadvantage compounded by the government's inability to distribute the tax burden fairly.

In general, public administration in Croatia is inefficient by international standards and characterized by poor coordination and a duplication of structures among different units. This is not only detrimental for public services to Croatia's citizens, but also a cost and competitiveness factor.

Moreover, since the interest differentials between borrowing in the local and foreign currencies have

been high over the past decades, borrowers have decided to take loans denominated in a foreign currency, which has led to the highest 'euroization' ratio in Europe. The misdirected incentives to borrow in foreign currencies have led to Croatia's high vulnerability to external shocks and a de facto loss of its autonomy to manage exchange rates in accordance with economic needs.

Croatia's general government debt-to-GDP ratio is the second-highest among its central and eastern European peer countries, and it is expected to rise further in 2016. Furthermore, the public guarantees given to state-owned companies pose an additional risk to the sustainability of public finances.

The protracted economic crisis has put the dominant pay-as-you-go pillar of the Croatian pension system under enormous financial strain. The subsidy to the pension system from the central government budget measured as a percentage of GDP is nearly as high as the public debt. Therefore, the subsidies could also be considered as largely debt-financed. Demographic factors will increase the debt-finance portion even more. Nearly 20 percent of the working-age population is receiving some kind of pension benefit, while the number of active contributors per beneficiary (the support ratio) has declined dramatically since 1990. On the other hand, the benefit level (as a percentage of average taxable wages) of old-aged pensions is relatively low.

The political dilemma of structural reforms

The overwhelming challenges Croatia is facing are not new. Their origin may well go back to the socialist system, but they have worsened dramatically since the outbreak of the financial crisis in 2008. The need for reforms has become truly overwhelming. However, as usual in such cases, some political forces are not keen on reforms. In Croatia some of these forces are counting on additional EU funds to solve the economic and social problems. Unfortunately, experience shows that economic stimulation with EU funds has only a short-run effect. It may light up a 'straw fire', but fail to solve any problems in a sustainable way.

External support, such as EU funding, should be utilized to make the process of restructuring and reforming the country easier, but not as a substitute for reforms.

Structural reforms may of course be less than popular among parts of the electorate in the short run, because change may be considered uncomfortable, even if unemployment in general stays in check. In certain cases, this may lead to a potential 'valley of political death' for a government, at least in the short term and especially if structural reforms are announced before an election. A committed and socially responsible government will implement structural changes in combination with social support measures, carefully monitoring the economic and social effects during the critical early stage of implementation. Figure 1 below illustrates this concept and explains how EU funding can be part of the reform strategy.

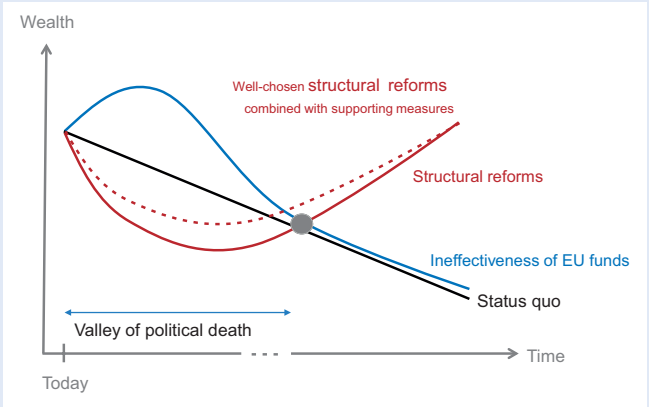
To alleviate the political dilemma problem, reforms should be chosen that keep the death valley as short and shallow as possible. Some reforms will have an immediate positive effect, while others will take time to be implemented and make an impact. Flattening the valley could be achieved by combining structural reforms with EU funds for employment generation and other social support, an approach that has been successfully followed by other countries.

Elements of a reform agenda for Croatia

A thorough study of the available data, the results of interviews with stakeholders in Croatia, reviews of the relevant literature, the study of benchmark

Figure 1

Valley of political death



Source: Authors' conception.

countries, fruitful workshops with our Croatian partners and a careful adherence to economic principles have led to a set of policy proposals that can be characterized as comprehensive, feasible and tailored to tackle the above challenges. The study devotes its analysis to providing answers to the following questions and issues:

External versus internal devaluation
Could a managed devaluation of the kuna reduce Croatia's competitiveness problem and eliminate incentives to borrow in foreign currencies? Or would it be more desirable instead to reduce production and services costs? Or maybe a combination of both? While either approach carries a social cost, is there any other realistic option for increasing competitiveness?

Consumer protection and bank regulation to reduce borrowing in foreign currencies
High rates of borrowing in foreign currencies reduce the scope and autonomy of a country to adjust its exchange rate according to economic demands, causing serious competitiveness problems. Can international experience be drawn upon to devise the right incentives and information systems to reduce foreign borrowing? Would it be advantageous to adopt the European Systemic Risk Board (ESRB) recommendations? Could the national supervisory authorities impose borrowing limits and risk management policies on financial institutions?

The importance of a consumer bankruptcy law
The introduction of a consumer bankruptcy law giving individuals and micro-enterprises the possibility to restructure their debts, along the lines of the continental European approach for a consumer bankruptcy law, would give indebted households a fresh start. What are the social and economic benefits of such an approach, and what are the conditions for applying such a relief program?

Labor market reforms
Labor markets in Croatia are too inflexible, imposing high costs and, therefore, driving down competitiveness. Improvements in flexibility contribute significantly to more employment, but are often seen as unjust and solely in the interest of employers. What does international experience show?

Activating the inactive
Activating policies have shown positive results in many countries, reducing long-term unemployment, and improving public finances and economic output. What instruments can be applied to turn a social welfare system that too often rewards not seeking work into a system that spurs the unemployed to actively search for jobs?

Coping with an aging society
Croatia's current pension system not only poses a heavy financial burden on the public budget: it is simply unsustainable. Should the statutory retirement age be linked *automatically* to life-expectancy? Should the eligibility rules for disability pensions, early retirement, and privileged pensions be revised? Can adequate changes be designed and implemented without undue social hardship? Does international experience help to identify the most suitable systems?

Stabilization and eventual increase of old-age pension benefit levels
Both the current and the expected levels of pension benefits are low compared to Croatia's peer countries. How can the present level be stabilized and later increased?

Facilitating the transition from school to work
The dual education system in Croatia should be expanded dramatically to tackle the high levels of youth unemployment and the perceived mismatch of skills in the labor market. What does international experience tell about the capacities of the dual training system to reduce youth unemployment? How can the system be expanded?

Training systems for the low-skilled
Would a voucher system especially targeted at persons with low or no formal qualification improve their employability? Could it also improve transparency of training facilities and offers? Could it increase lifelong learning and reduce skills mismatch, thus increasing employment?

Ensuring the tax system continuity and predictability
What are the advantages of aiming overall budget consolidation towards long-term sustainability *via* structural reforms compared to short-term fiscal adjustments? Does continuity of the tax system increase confidence in legislation and government and, therefore, improve the attractiveness for foreign and domestic investment? Is broadening of the tax base better than increasing tax rates? If so, what possibilities are there to broaden the tax base?

Increasing public administration efficiency and effectiveness

The introduction of digital procedures and bringing all levels of public agencies to an e-government operational status could significantly reduce red tape and remove opportunities for corruption. The elimination of duplicated structures as well as reducing the number of public employee would also contribute to increased efficiency. How can public employment be reduced without creating serious social problems? Is the current wage-setting mechanism appropriate?

Privatization options for non-strategic public companies

Privatization often is a sensitive issue because it may imply rationalization of employment. Is privatization necessary to solve the public budget and competitiveness problems? State guarantees and subsidies to publicly owned companies should be reduced and made far more transparent. Are there procedures based on international experience to ease the process of transforming state-owned enterprises into efficient businesses? Can privatization be achieved without significant loss of employment?

Improving the ease of doing business

Ease of doing business refers to how easy or difficult it is for an entrepreneur to set up and run a business when complying with relevant regulations. It is also positively correlated with domestic as well as foreign investment inflows. It may also reduce the opportunities for corruption. How can Croatia achieve a sound business environment with transparent and streamlined administrative processes?

Innovation strategies

Foreign direct investment has proved that it can be a substantial source of technological transfer. Another powerful way to foster innovation is to encourage research and development (R&D) in the private sector. While all the measures outlined so far aim at promoting foreign direct investment, public innovation promotion requires specific funds and know-how. Which promotion measures are plausible for Croatia in both the short and long terms, given the scarcity of public financial resources? What can be learned from international experience?

Infrastructure policy issues

Infrastructure is essential for the economic development and competitiveness of a country. A well-developed transportation and communication infrastructure integrates the local economy and connects the domestic to the international markets. Where are the major deficiencies? How good is international integration, especially with the rest of the EU? How could EU funding contribute to overcoming the problems of building an adequate infrastructure?

Concluding remarks

Eight years of recession and stagnation, high indebtedness and crushing unemployment are unmistakable signs that, as we said above, business as usual is no longer an option for Croatia. Conditions have to change for a better future even if the change may involve some pain. The proposed reform program has been crafted with care to ease possible hardship. It is designed to stop unemployment from increasing, and to restructure employment to a certain extent. International experience shows that such measures lead to a rapid increase in employment and to an improvement in economic performance on a more sustainable basis.

Foreign direct as well as domestic investment will start to increase as soon as the Government adopts a well-defined and credible reform program, coupled with well-calibrated incentives to turn Croatia into an attractive investment destination. European funds could provide a further impetus. Once investment picks up, employment will increase, opening the opportunity to implement the more 'painful' reform steps. Careful monitoring and the timely introduction of employment-generating measures will help this process along substantially.

Depreciation is unavoidable, but its more painful effects can be alleviated considerably if it is carried out in small, predictable steps over a long period. It is crucial to make people aware that Croatia will return to a more autonomous foreign exchange policy only after a certain 'grace period' to allow restructuring of loan portfolios. Disincentives have to be set for new loans in foreign currency. The announcement of a future change in the foreign exchange policy will already have a major impact on reducing the level of euroization.

The proposals contained herein take into account the interactions and interdependencies among the various policies. They should be enacted as a well-sequenced package. A piecemeal approach will not produce the

desired results. The reform proposals put forth, therefore, are neither radical nor do they call for an austerity programme. They outline a roadmap for the medium-term recovery of the chronically underperforming Croatian economy, starting with quickly-acting measures to reduce unemployment.

Croatia is faced today with the option of lurching from crisis to crisis, burdened by a permanently high unemployment rate and the loss of some of its best (young) brains to emigration, in a course that will unavoidably lead to the erosion of its public finances and ultimately to following the Greek path. This would be the price exacted by caving in to the vested interests of government-associated elites and other privileged groups who so vehemently defend the 'business as usual' approach.

The other option, that of sustainable, dynamic and employment-generating economic growth that offers increasingly good prospects, in particular to younger Croatians, will of course not be completely free of pain. Fortunately, there are ways available to ameliorate the pain. But a credible commitment to a serious, predictable reform programme is imperative to see this option through. Clearly, Croatia has what it takes to achieve as much progress as other former socialist countries now in the EU have already attained. It just needs the commitment.

Exchange Rate Policy in Croatia

Timo Wollmershäuser*

Introduction

For many years, Croatia's growth was built on domestic demand financed by cheap foreign credit. Export performance was weak, so that Croatia ran large current account deficits from 2002 on and built up external debt rapidly. When the global financial crisis hit Croatia in 2008, credit conditions tightened and capital inflows slowed down, pushing the economy into a severe and protracted recession. The crisis exposed a major problem: Croatia's poor competitiveness. The country is simply too expensive for an export-led recovery.[1]

Improving price competitiveness involves difficult policy choices. One way of tackling this issue is to devalue internally, that is, by reducing wages. The other way of addressing the problem is to devalue externally, that is, by allowing the kuna to depreciate. Doing nothing or doing not enough about price competitiveness is not an option. Greece gives a very plastic example of where a country can steer itself into if it does not manage to reduce wages and prices enough to restore competitiveness while keeping the exchange rate stable. After a deep recession, Greek industrial production is devastated and there is still massive unemployment. Price competitiveness has improved only marginally, so that the current account balance is still negative – despite reductions in interest payments thanks to the European Central Bank's (ECB's) monetary policy and international rescue credits. Public debt and foreign liabilities increase relentlessly, and it is unclear how and when Greece will be able to service its debt obligations on its own, let alone to reduce debt levels.

* Ifo Institute.

[1] See Bakker and Klingen (2012) for an overview of developments before and during the recent financial and economic crisis in Croatia.

This paper discusses the effects of external devaluation compared to internal devaluation. We propose a gradual, managed currency devaluation, which is an easier way to improve price competitiveness while smoothing out inevitable negative balance sheet effects. The policy proposal is designed such that incentives to borrow in foreign currency are eliminated. The proposed policy would thus not only help to promote exports, but also to reduce euroization, one of the key vulnerabilities of the Croatian economy.

Macroeconomic situation

In contrast to most other countries in the region, the Croatian economy has not yet recovered from the recent financial and economic crisis. After six years of recession, GDP has shrunk by 13 percent since the second quarter of 2008 — the time just before the onset of the financial crisis marked by the collapse of Lehman Brothers. Industrial production, a motor of economic activity, has plunged by 17 percent, while in Central and Eastern Europe it is already 8 percent higher compared to the pre-crisis level. During the crisis, the unemployment rate has more than doubled in Croatia. Recently, it has risen even further and currently stands at 18.2 percent. Given the spare capacity in the economy, consumer price inflation is very low, at – 0.2 percent in April 2015. To some extent, this is due to reduced energy prices. However, core inflation that excludes energy, food, alcohol and tobacco prices only recovered from deflation in summer 2014, and is still fairly low, at 0.7 percent.

Competitiveness problem

One major reason for Croatia's subdued economic performance is the fact that it has not been able to restore its price competitiveness enough to stimulate robust export growth. Measured by the real effective exchange rate based on the GDP deflator (the price index for all domestically produced goods) relative to its 37 most important trading partners, Croatia has only improved its competitiveness by 7 percent since the onset of the crisis, while it had appreciated in real

terms by 23 percent since 2000. The real effective exchange rate can fall either because the nominal exchange rate depreciates or because wages and prices inflate less compared to the trading partners, channels we refer to as external and internal devaluation, respectively. In Croatia, the improvement in price competitiveness is primarily due to external devaluation; the nominal effective exchange rate has depreciated by 5 percent since 2008. Internal devaluation has not been effective, although yearly growth of public wages has been negative between the end of 2009 and mid-2010, and since summer 2012.

An important indicator of a country's competitiveness is its current account balance. Having run current account deficits of 5 percent of GDP on average between 2000 and 2008, Croatia had a broadly balanced current account in 2012 and achieved small surpluses of 0.1 percent and 0.6 percent in 2013 and 2014. Yet it would be wrong to conclude that Croatia has solved its competitiveness problem. Firstly, a look into the components of the current account reveals that the improvements in Croatia are primarily a result of the recession, which strongly reduced imports. A boost in competitiveness would have led to strong exports, but they have increased only minimally.

Secondly, although a balanced current account is often used as a metric for external sustainability, this concept does not take into account the accumulated stock of net external liabilities, that is, foreign capital inflows that have financed former trade deficits as well as any additional borrowing that was needed to meet corresponding interest obligations. In fact, a balanced current account merely means that a country realizes a trade surplus large enough to cover interest payments to foreign investors (and employment compensation to non-residents). Only with substantial current account surpluses is a country able to reduce external liabilities. In fact, Croatia is still heavily indebted abroad; its external liabilities fell only slightly, from 95 percent of GDP in 2010 to 89 percent in 2013, which is still far above the European Commission's threshold of 35 percent. This threshold for external sustainability is somewhat arbitrary; other values range from 25 percent to 60 percent (Pill *et al.* 2012; European Commission 2015). However, if a country's net external liabilities are much higher, investors could doubt its capacity to meet its current and future debt service obligations. In this case, they could demand a risk premium on investments, which would increase interest rates and, in turn, raise the debt burden, so that a vicious circle and a severe debt crisis could ensue.

Devaluation requirements

To achieve larger and sustained current account surpluses based on robust export growth, Croatia needs to devalue further in real terms. But how large are the devaluation requirements? Actually, there are various measures to assess the real exchange rate and they all lead to different conclusions. The IMF's estimates for Croatia vary between 10 percent overvaluation and 7 percent undervaluation (IMF 2014). Accordingly, Croatia could appreciate in real terms by almost 7 percent and its net external liabilities would remain stable at its current level. To reduce it to 40 percent, the real effective exchange rate is broadly balanced. However, these estimates are based on a range of assumptions about real growth, inflation, interest rates, and the time frame. Under these assumptions, Croatia would reach sustainable external debt levels over a long time period and by further reducing imports rather than by increasing exports. The IMF's preferred method analyses competitiveness by comparing unit labor costs relative to competitors. In a cross-country regression of average wages on labor productivity, Croatia turns out to be overvalued by 10 percent.

We use an alternative, though related, method that assesses competitiveness more directly by comparing prices of key export goods and services relative to competitors rather than unit labor costs. To evaluate whether a currency is over- or undervalued, comparative price levels contrast the nominal exchange rate with purchasing power parity, which is the level of an exchange rate at which prices of certain baskets of goods and services are equal between two countries. Key Croatian export sectors are tourism, transport equipment and electrical equipment. Comparing prices for restaurants and hotels in Greece, Italy and Turkey relative to Croatia, it becomes obvious that the Croatian tourism industry is quite competitive; in 2013, prices in Croatia were 4 percent lower than in Turkey, 17 percent lower than in Greece and no less than 49 percent lower than in Italy. However, for manufactured goods, the picture is somewhat different, especially in comparison to a country like Poland, where prices for transport equipment, including shipbuilding, were 7 percent lower and for electrical equipment, including electrical transformers, 5 percent lower than in Croatia. From these data, we conclude that Croatia has to devalue in real terms by up to 7 percent, which is broadly in line with the IMF estimate of 10 percent.

External devaluation as preferred policy option

There are three reasons why external devaluation is to be preferred to internal devaluation. Firstly, devaluing the currency is much easier than restricting or, worse, lowering wages. In Croatia, reducing unit labor costs seems to be difficult because of the large shadow economy and a relatively inflexible labor market characterized by rigid wage setting and a high degree of employment protection (Bakker and Klingen 2012; Kunovac 2014). If Croatia relies on internal devaluation, but does not succeed in lowering prices sufficiently, this strategy will further reduce demand without increasing exports.

Secondly, an important argument in favor of external devaluation is that allowing for more exchange rate flexibility would reduce the extent of euroization of the Croatian economy. In fact, a relatively stable exchange rate aggravates the exchange rate illusion for which many debtors seem to fall. Seeing that foreign interest rates are lower than local interest rates, they presume that foreign-currency loans are cheaper. But they do not take into account potential negative effects due to depreciation of the local currency. A more flexible exchange rate regime could reduce incentives to borrow in foreign currency by making people aware of exchange rate risks.

Thirdly, it is true that external devaluation would lead to negative balance sheet effects, especially for the Croatian government and non-financial firms. The household sector as a whole would be better off, but gains and losses would be unevenly distributed between richer and poorer households. But when devaluation is gradual, these balance sheet effects are smoothed and can therefore be better digested by debtors and banks. Furthermore, it should be kept in mind that internal devaluation *also* leads to adverse balance sheet effects. The difference is that with external devaluation, balance sheet effects affect all those holding foreign-currency debt, while with internal devaluation, adverse effects are shared among all debtors because debt now has to be serviced with lower nominal income.

Achieving external devaluation through a managed float

In a managed floating regime, the central bank has two independent instruments at its disposal, the exchange rate and short-term interest rates. A centerpiece of international macroeconomics is the 'impossible trinity', which says that a country with open capital markets must choose between monetary independence and a stable exchange rate (Fleming 1962; Mundell 1963). However, with intermediate policies such as the proposed managed floating, a country receives greater monetary independence (Bofinger and Wollmershäuser 2001 and 2003; Radošević 2014). The central bank is then able to fully sterilize its foreign exchange interventions, thereby keeping local interest rates at the desired level.

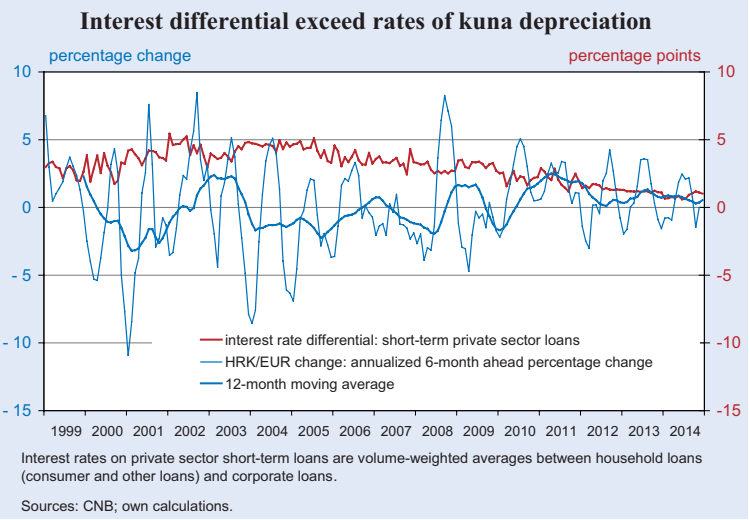
In practice, the central bank first determines the appropriate degree of restriction given its inflation target and the state of the economy, that is, the degree to which it stimulates or dampens domestic production and inflation. Subsequently, it chooses an optimal policy mix between short-term interest rates and the exchange rate such that investors and borrowers are indifferent between local and foreign investments and loans, respectively. To reach an optimal policy mix, exchange rate changes should offset differentials between local and foreign interest rates on average. In the case of Croatia, where local interest rates lie above foreign interest rates, the local currency should depreciate. Thus, the advantage of cheaper foreign credit is fully compensated by the fact that the value of the loan increases due to depreciation.

Although the kuna depreciated somewhat on average during the years 2009 to 2014 it was not sufficient to counteract the interest rate differential between local and foreign interest rates (see Figure 1).[2] *Ex post*, it was actually cheaper to take out loans in foreign currency than in kunas. Since the beginning of 2014, the policy mix was almost optimal, with an average interest rate differential only slightly larger than the average annualized depreciation.

Managing a devaluation path implies that if the exchange rate is not depreciating sufficiently, the Croatian National Bank (CNB) should buy foreign exchange against kunas. In this case, the CNB would keep on increasing foreign-currency reserves. Currently, the corresponding increase in kuna liquidity should be welcome, so it should not be sterilized. Should sterilization become necessary to avoid an overheating of the economy, the CNB should issue interest-bearing CNB bills, raise the interest rate on overnight deposits

[2] For an in-depth analysis of Croatian monetary and exchange rate policy, see Buchen and Wollmershäuser (2016).

Figure 1



or offer an interest-bearing deposit facility on excess reserves. Rising CNB rates would increase domestic banks' loan rates and thereby exert a contractionary effect on the economy.

If, however, depreciation has to be decelerated, the policy of managed floating has its limitations. The CNB would have to sell foreign exchange against kunas, running down its foreign exchange reserves. To avoid large losses, the CNB should seek an agreement with the ECB to provide short-term credit lines to the CNB in such a scenario. Joining the Exchange Rate Mechanism, a system designed to stabilize the exchange rate prior to euro adoption, could be a possible framework for such central bank cooperation. However, the ECB made clear that apart from fiscal consolidation it is necessary for Croatia to address euroization and enhance the attractiveness of financial intermediation in local currency before the ECB would be willing to accept Croatia's membership in ERM II (ECB 2004). Thus, an easy exit strategy does not seem to exist, but our proposed policy is one way of reducing euroization for which Croatia can hope to get the ECB's support.

References

Bakker, B. B. and Klingen, C. (2012), *How Emerging Europe Came through the 2008/09 Crisis: An Account by the Staff of the IMF's European Department,* Washington DC: International Monetary Fund.

Bofinger, P. and T. Wollmershäuser (2001), "Is There a Third Way to EMU for the EU Accession Countries?", *Economic Systems* 25, 253–274.

Bofinger, P. and T. Wollmershäuser (2003), "Managed Floating as a Monetary Policy Strategy", *Economics of Planning* 36, 81–109.

Buchen, T. and T. Wollmershäuser (2016), "Exchange Rate Policy", in: Falck, O. and S. Schönherr (eds., 2016), *An Economic Reform Agenda for Croatia*, ifo Forschungsberichte 70, Munich: Ifo Institute, 27–51.

European Central Bank (2004), *Monetary Policy and ERM II Participation on the Path to the Euro,* Speech by Lucas Papademos, Vice President of the ECB at the Tenth Dubrovnik Economic Conference, Dubrovnik, 25 June.

European Commission (2015), *Country Report Croatia 2015 Including an In-Depth Review on the Prevention and Correction of Macroeconomic Imbalances,* Commission Staff Working Document.

Fleming, M. (1962), *Domestic Financial Policies under Fixed and Floating Exchange Rates,* IMF Staff Papers 9.

International Monetary Fund (2014), *Republic of Croatia: 2014 Article IV Consultation – Staff Report, Press Release, and Statement by the Executive Director for the Republic of Croatia,* IMF Country Report 14/124, May.

Kunovac, M. (2014), "Employment Protection Legislation in Croatia", *Financial Theory and Practice* 38, 139–172.

Mundell, R. (1963), "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates", *Canadian Journal of Economics and Political Science* 29, 475–485.

Pill, H. *et al.*, Goldman Sachs Global Economics (2012), *Achieving Fiscal and External Balance (Part 1): The Price Adjustment Required for External Sustainability,* European Economics Analyst 12/01, 15 March.

Radošević, D. (2014), *Capital Account Mismanagement, Deleveraging and Unstable Economy in the European Union Periphery Countries: The Case of Croatia and Slovenia,* The Institute of Economics, Zagreb.

Managing Household Debt in Croatia

Teresa Buchen*, Marcus Drometer**, Katrin Oesingmann** and Timo Wollmershäuser**

Household debt in Croatia

Household debt in Croatia has risen considerably since the turn of the century, from 17 percent relative to GDP in 2001 to 41 percent in 2014. As shown in Figure 1, it was the highest household debt-to-GDP ratio, together with Estonia's, among the CEE10 countries[1] in 2014 (Eurostat 2015, European Commission 2014 and 2015).

More than 70 percent of all loans to households and non-financial and financial corporations are denominated in or indexed to a foreign currency, mainly the euro and the Swiss franc. This is the highest ratio in the European Union (ESRB 2015). Apparently, households fall for an exchange rate illusion: by considering only the fact that interest rates on foreign-currency loans are lower than those on kuna loans, they ignore the risk of currency depreciation. This may be reinforced by the exchange rate policy of the Croatian National Bank, which aims to guarantee stability through the quasi-peg to the euro. But between 2009 and April 2015, the kuna depreciated by 7 percent against the euro and even by 36 percent against the Swiss franc. The Swiss franc/kuna exchange rate stabilized when the Swiss National Bank introduced the exchange rate floor to the euro, but depreciated by an additional 14 percent when the floor was removed in January 2015.

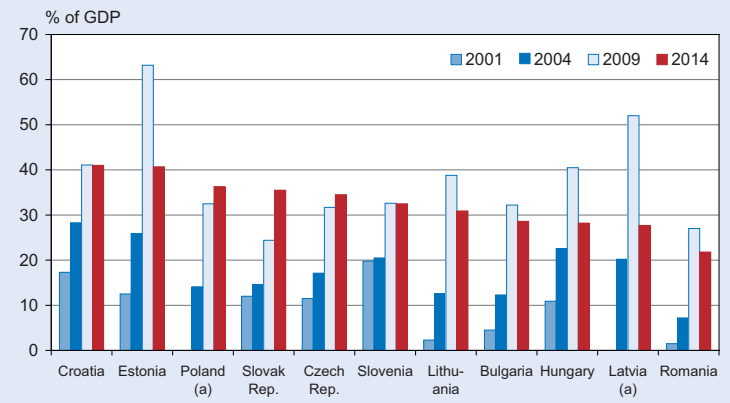
Depreciation and the protracted recession in Croatia have made it difficult for many households to service their debt. The share of non-performing loans among households – that is, loans that are in or close to default – has trebled in the course of the recession, from 4 percent at the end of 2008 to 12 percent in June 2014 (see Figure 2). A substantial share of the population is not even able to pay their utility bills. Due to this, 313,830 bank accounts were blocked as of August 2014 (FINA 2014), which corresponds to about 7 percent of the population (assuming that every citizen has only one bank account).

Ad-hoc measures by the Croatian government

The Croatian government has taken several *ad-hoc* measures to cushion some of the negative effects of household indebtedness. In particular, the issue of blocked bank accounts has been addressed by the Fresh Start Program, which consists of debt relief for the poorest households (Government of Croatia 2015a). The Consumer Credit Act was introduced on 15 January 2015 to offset the effect of the appreciation of the Swiss franc, and the corresponding increase in

Figure 1

Household debt-to-GDP ratio in CEE countries, 2001–2014



(a) Data not available for the year 2001.

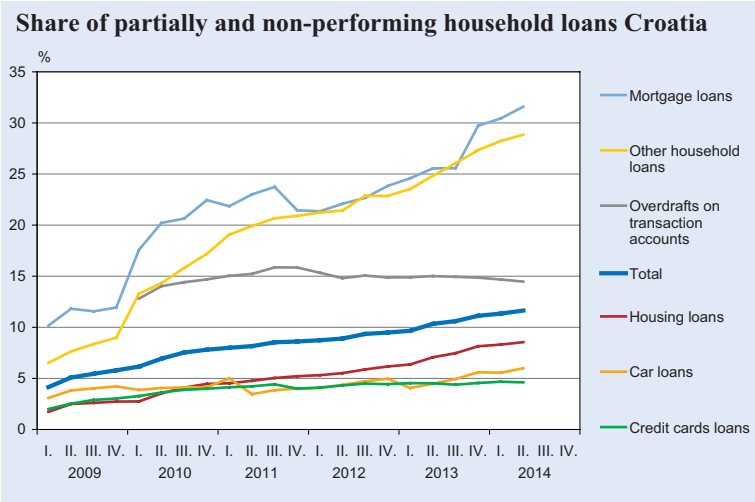
Source: Eurostat, Financial Balance Sheet (2015).

* Credit Suisse Zurich.

** Ifo Institute.

[1] CEE10 = ten countries of Central and Eastern Europe (CEE) including Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia.

Figure 2



value of Swiss franc-loans, by temporarily imposing a fixed kuna-Swiss franc exchange rate on existing loans (Government of Croatia 2015b). Furthermore, other *ad-hoc* measures are being discussed in Croatia and elsewhere in the region, in particular a permanent conversion of all foreign-currency mortgage loans to local currency following the Hungarian example.

Other European governments have intervened in the past years, mainly due to non-existing or non-sufficient consumer bankruptcy laws and the fear of broader side effects on the financial sector and the whole economy. Experience shows that direct government support may be needed in cases where the debt overhang is so severe and widespread that market mechanisms no longer work and/or financial stability is at risk (see e.g. the case of Iceland; Liu and Rosenberg 2013). But generally speaking, temporary measures by the government can be criticized as interfering with private contracts and undermining credit discipline. They damage the rule of law, may endanger the independence of judiciary, and raise the problem of moral hazard (Liu and Rosenberg 2013). They therefore may give negative incentives for private households to continue incurring excessive debt, and for banks to promote loans in foreign currencies.

Consumer bankruptcy laws

Theoretical background

A personal bankruptcy law aims to establish an even, predictable burden-sharing between borrower and lender. It should make it possible for the private person to get a 'fresh start' after completing a certain period of repayments, rehabilitating her afterwards by clearing the unpayable remaining debts (Christopherson and Abjornsson 2011). On the other hand, it should maintain credit discipline and prevent moral hazard. As a result, many countries have changed their stance, from one in which only lenders are responsible for their debts and where contracts have to be complied with, to a view where the creditors are also responsible for the over-indebtedness of the households mainly because of loose lending policies. The rehabilitation of the debtor slid into the main focus when new consumer insolvency laws were being devised in recent years.

In general there are two different models of consumer bankruptcy, the Anglo-Saxon and the continental European models. The first stands for a liberal 'fresh start' policy and is common in the United States, Canada, Britain and Commonwealth countries. It is referred to as a 'fresh start' system since debtors can discharge their debt via bankruptcy and continue their lives free of their previously existing debt without the need to fulfill a 'payment plan' over a certain time period (Ramsay 2012). The continental approach, in turn, consists of a long-lasting procedure that allows for a fresh start only after a period of distress and sanction ('earned start'). Consumer bankruptcy regulations structure consumer's debt repayments and limit the amount of earnings that can be used for the individual's living. Laws within the Continental approach mainly differ regarding the duration of the repayment and recuperation process.

Status quo in Croatia

Croatia's current insolvency regime only covers the bankruptcy of corporations and not that of individuals – the institutions of personal bankruptcy and debt rescheduling for the over-indebted do not exist. The missing legal framework has become a problem in the past years as the total indebtedness of the private households grew and the number of insolvent households with blocked bank accounts increased.

In response, the government passed several *ad-hoc* measures, while a draft for a consumer bankruptcy

law (Draft of the Consumer Bankruptcy Law Proposal, Ministry of Justice, June 2014), modeled on the German approach, is currently under examination (Bodul and Žiković 2014). On 13 March 2015 the Croatian government endorsed the consumer bankruptcy bill. According to the government, the bill includes the following measures: a debtor will first have to try to settle with the creditor out of court, under the aegis of a Financial Agency advisory body. If no agreement is attained, the proceedings will continue in court. If no court settlement is reached, the court will then appoint a trustee to divide the consumer's estate. Debts would be written off only for debtors without assets or job prospects, while employed debtors would retain income only for the bare necessities, the rest going towards paying off their debts. Consumers who file for bankruptcy will have to report to the trustee any changes to their assets for a period ranging from one to five years. Filing for bankruptcy will be possible to all insolvent consumers with debts exceeding 30,000 kunas if they have been unable to serve their debts for three consecutive months (Government of Croatia 2015c).

Latvia's new consumer bankruptcy law

During the boom years (2000–2007), Latvia's non-financial private sector debts, held predominantly in foreign currencies, increased rapidly. While real GDP grew by an average of 10.3 percent annually between 2005 and 2007, external debt did so by 172 percent, reaching 128 percent of GDP. When the financial crisis hit in 2008/09, debt restructuring became unavoidable. The restructuring was in part done by the foreign banks in Latvia, which had the necessary resources for the purpose. The Latvian government, in turn, chose a market-based approach to restructure the debts, preferring the provision of a sufficient legal framework over direct public intervention.

Firstly, amendments to tax legislation were introduced to give incentives for debt forgiveness. For instance, the transfer of a distressed loan to a third party was declared a tax-neutral event. Secondly, incentives for voluntary out-of-court debt restructuring were set in order to relieve the courts and make the process of restructuring speedy, cost-effective and flexible. Thirdly, in 2009 amendments to the insolvency law were made to allow the rehabilitation of viable firms and the liquidation of non-viable firms.

Furthermore, a new personal insolvency law was adopted in 2010 to provide indebted individuals with the possibility of an exit and of avoiding over-indebtedness, providing financially responsible individual debtors with a fresh start at the end of their insolvency proceedings. The repayment plan lasts between 1 year and 3.5 years, depending on how much the debtor is able to repay of the remaining obligations. Further recommendations to the legislation are the strengthening of the court system and amendments to the Civil Procedure Law (Erbenova, Liu and Saxegaard 2011).

Policy proposals

Private bankruptcy legislation

Taking a leaf from the Latvian example, the best way to deal with private household debt is *via* a consumer bankruptcy law that gives individuals and micro-enterprises the possibility to restructure their debts and make a fresh start. With a view to forestalling bankruptcy tourism (Hoffmann 2012) and considering the general alignment of rules and laws within the European Union, we propose for Croatia to follow the continental European approach for a consumer bankruptcy law. Based on the experience with existing private bankruptcy laws in Europe, a maximum repayment period of 3 to 5 years is advisable, with 5 years being considered more debtor-friendly and shorter periods more creditor-friendly. We advise against regulations stipulating that filing for bankruptcy is permitted only above a given amount of debt (see Government of Croatia 2015c – new bill on personal bankruptcy in Croatia stipulates that filing for bankruptcy will only be possible if debts exceed 30,000 kunas).

The implementation of a new law needs to be embedded in the institutional infrastructure, including the availability and quality of judges and trustees, administrative capacity, accounting, and valuation systems. In order not to put undue stress upon the existing legal institutions, out-of-court settlements must be encouraged as well, which can take the form of voluntary arrangements between the lender and the borrower consisting of a binding and formal arrangement under which creditors may agree to accept less than the full amount they are owed, usually paid over a period of three to five years, or introducing third-party payments.

Preventing consumer insolvency

(1) Consumer protection

Croatia should follow the European Commission's proposal for legislation on 'responsible lending and borrowing' on mortgages, which includes a range of preventive measures such as requiring a standardized pre-contractual information sheet, having a mandated period where the borrower has the right to withdraw, regulating advertisement, and verifying creditworthiness (European Commission 2011 and 2013). The European Systemic Risk Board (ESRB) also published recommendations in 2011 covering the granting of foreign-currency loans, recommending that the national supervisory authorities and EU member states require their financial institutions to provide borrowers with adequate information regarding the risks involved in foreign-currency lending and also, if necessary, directly limit the amount of lending in foreign currencies (ESRB 2011).

The following measures should accompany a law on consumer bankruptcy, aimed at preventing consumer insolvency:

- Bank customers must consult guidelines provided by banks/national authorities to inform themselves about possible risks of their loans, in particular the exchange-rate risks associated with loans denominated in a foreign currency[2]
- Banks can be recommended to offer financial instruments to hedge against the exchange-rate risk associated with loans in foreign currencies
- Debt counselling and financial education for individuals
- A credit registry for private consumers providing banks and businesses with information about the creditworthiness of borrowers.

(2) Risk management for the banking sector

The ESRB has also made recommendations concerning the risk management of financial institutions, asking the national supervisory authorities mainly to monitor levels of foreign-currency lending and to allow foreign-currency loans to be granted only to borrowers with sufficient creditworthiness (ESRB 2011). The Croatian National Bank has been using a variety of measures since 2003 to slow credit growth, especially in foreign currencies, including higher reserve requirements and higher risk weights for unhedged foreign currency loans, as well as measures like ceilings on credit growth, marginal reserve requirements on foreign borrowing, and foreign currency liquidity requirements (Murgasova and Rahman 2012). But success has been modest, especially as regards loans to Croatian corporations, since foreign parent banks extended credit directly to the customers; the scant success may also be due to the fact that banks did not take account of the regulations.

A national supervisory authority should stipulate the measures to be adopted by the different financial institutions, which include:

- Furthering the implementation of the Basel III and EU Capital Requirements Directive IV/Capital Requirements Regulation (CRD IV/CRR)
- Incorporating foreign-currency lending risks in banks' internal risk management systems
- Stricter lending policies for loans in foreign currencies, especially for unhedged households
- Stress tests for banks in order to check stability and to quantify the effects of economic changes on the borrower's solvency

Conclusion

No further state interventions or *ad-hoc* measures are recommended, since they severely interfere with legal certainty and the rule of law. Instead, the introduction of a consumer bankruptcy law, measures to prevent unsustainable household indebtedness and risk management tools on the banking side are strongly recommended. In particular, loose credit regulations should be tightened and loans denominated in foreign currencies should be hedged.

References

Bodul, D. and I. T. Žiković (2014), "Advantages and Disadvantages of German Consumer Bankruptcy Model: Guidelines for Croatian Lawmaker", *Ekonomski Vjesnik / Econviews: Review of Contemporary Business, Entrepreneurship and Economic Issues,* God. XXVII, BR. 2/2014, 393–407.

Christopherson, K. and R. Abjornsson (2011), *Republic of Lithuania: Technical Assistance Report on Proposals for Reforming the Insolvency Regime,* IMF Country Report 11/320.

[2] For an example of a customer consulting guideline on foreign currency loans, see http://oenb.at/dms/oenb/Finanzmarktstabilitaet/Downloads/Systemrisikoanalyse/Fremdw-hrungs--und-Tilgungstrgerkredite/Folder-Fremdwaehrungskredite/Folder%20Fremdw%C3%A4hrungskredite.pdf.

Croatian National Bank (2015), *Some Facts about Loans in Swiss Francs and Some Options for Government Intervention,* Press Release, 21 January.

Erbenova, M., Y. Liu and M. Saxegaard (2011), *Corporate and Household Debt Distress in Latvia: Strengthening the Incentives for a Market-Based Approach to Debt Resolution,* IMF Working Paper 11/85.

European Commission (2011), *Proposal for a Directive of the European Parliament and of the Council Credit Agreements Relating to Residential Property,* 2011/0062 (COD).

European Commission (2013), *Creating a Fair Single Market for Mortgage Credit – FAQ,* Press Release, http://europa.eu/rapid/press-release_MEMO-13-1127_en.htm.

European Commission (2014), *Macroeconomic Imbalances Croatia 2014*, Occasional Papers 179, March.

European Commission (2015), *Country Report Croatia 2015 – Including an In-Depth Review on the Prevention and Correction of Macroeconomic Imbalances,* Commission Staff Working Document.

European Systemic Risk Board (ESRB, 2011), *Recommendation of the ESRB of 21 September 2011 on Lending in Foreign Currencies,* Official Journal of the European Union, C 342/1.

European Systemic Risk Board (ESRB, 2015), *ESRB Risk Dashboard*, March.

Eurostat (2015), *Financial Balance Sheets [nasa_10_f_bs].*

FMA (2013), *FMA-Minimum Standards for the Risk Management and Granting of Foreign Currency Loans and Loans with Repayment Vehicles.*

FINA (2014), *Pregled Blokiranih Gradana Po Vjerovnicima I Roćnosti 31 August,* http://www.fina.hr/Default.aspx?art=11269.

Government of Croatia (2015a), *Banks, Telecom Operators Sign Agreement on Debt-Write Off for Destitute Citizens,* Press Release, 20 January, https://vlada.gov.hr/news/banks-telecom-operators-sign-agreement-on-debt-write-off-for-destitute-citizens/16223.

Government of Croatia (2015b), *Gov't Moves Amendments to Protect Debtors from Sky-high Franc,* Press Release, 21 January, https://vlada.gov.hr/news/gov-t-moves-amendments-to-protect-debtors-from-sky-high-franc/16252.

Government of Croatia (2015c), *Government Endorses Personal Bankruptcy Bill,* Press Release, 13 March, https://vlada.gov.hr/news/government-endorses-personal-bankruptcy-bill/16540.

Hoffmann, T. (2012), "The Phenomenon of 'Consumer Insolvency Tourism' and Its Challenges to European Legislation", *Journal of Consumer Policy* 35, 417–419.

Liu, Y. and C. B. Rosenberg (2013), *Dealing with Private Debt Distress in the Wake of the European Financial Crisis – A Review of the Economics and Legal Toolbox,* IMF Working Paper 13/44.

Murgasova, Z. and J. Rahman (2012), "Croatia: Averting Financial Crisis but Struggling to Become Competitive", in: Bakker, B. and C. Klingen (eds.), *How emerging Europe came through the 2008/09 Crisis: An Account by the Staff of the IMF's European Department,* 245–250.

Ramsay, I. (2012), "Between Neo-Liberalism and the Social Market: Approaches to Debt Adjustment and Consumer Insolvency in the EU", *Journal of Consumer Policy* 35, 421–441.

Stimulating Foreign Direct Investment and International Trade to Generate Employment

Thomas Steinwachs and
Erdal Yalcin*

Introduction

After Croatia was granted EU candidate status in 2004, its gross domestic product (GDP) and foreign direct investment (FDI) inflows increased steadily until the outbreak of the financial crisis in 2008. Both GDP and inward FDI in Croatia have been stagnating ever since, with macroeconomic imbalances becoming increasingly problematic and overall economic conditions changing for the worse. An increase in FDI inflows and a stimulation of international trade could help the country to create new firms and thereby achieve sustainable growth in employment.

Analysis of sectoral import and export data provided by the United Nations Conference on Trade and Development's data center (UNCTADstat) reveals that Croatia's export performance over the past decade has been poor. This suggests that its exports are not sufficiently competitive to gain market share in the EU, even though European market access has improved for Croatian exporters. Croatia currently runs a trade deficit in nearly all major sectors. While EU membership has increased Croatia's imports, the exporting sector has not yet benefited from increasing integration into the EU. We argue that Croatia has significant scope to return to a sustainable growth path by stimulating inward FDI and exports *via* measures to increase its competitiveness, in particular through relative labor cost reduction.

* Ifo Institute.

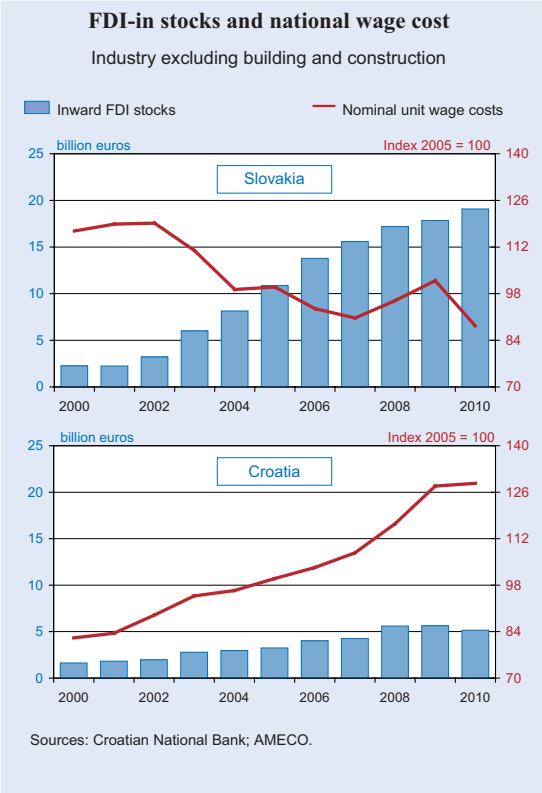
How labor costs affect FDI, exports and GDP growth

In cross-border business, there is a strong negative correlation between a country's cost-driving conditions – like labor costs – and inward foreign direct investment. Rising labor costs in Croatia have hampered inward FDI growth, leading to unfavorable economic conditions relative to other EU countries, where declining labor costs have been accompanied by a very sharp increase in FDI inflows. Taking Slovakia as an example, Figure 1 illustrates the strong negative relationship between wage costs and FDI inflows. By contrast, Croatia is a clear underperformer in attracting FDI: While Slovakian FDI inflows into the industrial sector increased by 750 percent over 10 years (from 2,245 million euros in 2000 to 19,086 million euros in 2010), Croatia only experienced an increase of 215 percent over the same period (from 1,636 million to 5,158 million euros). Simultaneously, Croatia has relatively higher labor costs, which are uncompetitive, compared to other recent EU members, and thus impede FDI attraction: 9.20 euros per hour on average in 2008, compared to 7.30 euros per hour in the same year in Slovakia, according to Eurostat.

Low labor costs in comparison to alternative FDI destinations can be considered a core reason for foreign direct investors to enter countries. Attracted by the advantage of low production costs, foreign investors not only set up new companies to serve domestic markets, but often integrate those newly built or acquired plants into their European production network, providing a further boost to exports. Indeed, sectoral data from the Ifo Database and the Croatian National Bank suggest that stagnating and falling FDI inflows in Croatia's manufacturing industries have been associated with stagnating and weakening exports.

However, the economic relationship between labor costs, FDI inflows, and exports is not unidirectional. It is characterized by an endogenous circle of economic interdependencies that has been observed in most EU member countries over the past decade. Initially, a reduction in labor costs is associated with increasing FDI inflows. Subsequently, most European member countries experienced a substantial increase

Figure 1



in labor productivity driven by capital investments originating from FDI inflows. Hence, a rise in FDI inflows can improve labor productivity and thereby support a lasting low labor cost environment with increasing output. Both increasing FDI and stable labor costs with rising productivity lead to competitive exports. Finally, rising exports again have positive repercussions on FDI inflows, labor productivity, and labor costs. It has been well substantiated in the economic literature that there is not only a selection process of relatively more productive firms into exports,[1] but that exporters also become more productive over time compared to their non-exporting competitors.[2] This increase in productivity then allows the exporting firms to pay higher wages, leading to a demand-driven boost to the domestic economy, which in turn results in additional incentives for foreign investors to increase FDI. Once this circle is set in motion by external measures (like exchange rate policy) or internal measures (like labor cost reduction), increasing FDI inflows and exports can result in sustainable GDP growth and additional employment.

[1] See e.g. the prominent theoretical work by Melitz (2003) and empirical studies by Bernard and Jensen (1999) and Van Biesebroeck (2005).

[2] See e.g. Bustos (2011) on the firm-level innovation-promoting effects of international trade (learning by exporting) or Lileeva and Trefler (2010) on the market-expanding effects of trade causally encouraging firms to innovate.

Comparing Croatia with recent EU members and candidates

Several countries that have become new EU members over the past decade have successfully initiated deep economic reforms to boost domestic growth and employment by taking advantage of easier access to the EU markets (e.g. Slovakia and the Czech Republic). To assess the potential quantitative effects of economic reforms in Croatia, it is important to identify and compare countries that are similar to Croatia in their economic development. We subdivide the sample of European countries into three quantiles by real GDP per capita. Within the lowest quantile, Macedonia, Bulgaria and Romania constitute outliers at the lower end and therefore are dropped from the sample. The resulting subsample contains 12 European countries that are evenly distributed around Croatia in terms of real GDP per capita. These countries are referred to as Croatia's *peer group* and include the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Turkey over the time horizon from 1990 to 2014, whereas Greece, Portugal, Slovenia and Malta leave the peer group over the course of time. We use this peer group to quantitatively assess the correlations between labor costs, inward FDI, and exports.

Using Eurostat data on hourly gross wages in 2013, it can be seen that Croatian hourly labor costs, with an average of 7.40 euros, are comparatively high relative to its peer countries, with the only notable exceptions being the Czech Republic (7.50 euros) and Slovenia (12.40 euros). Average wages are lower in Lithuania (4.40 euros), Latvia (5.00 euros), Hungary (5.60 euros), Slovakia (6.20 euros), Poland (6.40 euros) and Estonia (6.60 euros). Looking at wage data on the sectoral level provided by INDSTAT, a similar pattern holds for major industries. In many sectors, Croatia represents the upper end of the wage distribution among its peer group, even though this peer group has been defined such that Croatia, in terms of real GDP per capita, occupies an average position.

Thus, the Croatian economy is relatively uncompetitive in terms of labor costs such that its peer group countries offer a more attractive environment for foreign direct investors. To attract additional FDI, increase exports, and get back onto a sustainable growth path, Croatia needs to improve its competitiveness by reducing average labor costs.

Potential strategies to improve FDI and international trade competitiveness

To analyze empirically the correlation between unit labor costs and inward FDI and exports, especially for Croatia and its peer group countries, we employ a cross-country regression approach, using a number of control variables and country fixed effects to account for unobserved country characteristics. One methodological caveat is that endogeneity in the explanatory variables may lead to biased estimates of the effect of wages on FDI and exports, as well as of the effect of FDI and exports on output. To partially alleviate reverse causality, we use lagged explanatory variables.[3] Nevertheless, endogeneity bias in the coefficients is very likely to persist, such that the estimators should be interpreted as correlations in sign and overall magnitude, but not as exact causal predictors.

Moreover, sensitivity of exports and inward FDI to labor costs may differ significantly across different industries due to underlying and systematic differences in industry characteristics. It is therefore important to identify the industries in which an internal devaluation strategy appears most reasonable to boost exports and inward FDI. In a first step, we use country-level data provided by Eurostat for the years 2000–2013 to analyze the aggregate relationship between labor cost, FDI, exports, and GDP for Croatia and its peer group. This allows us to quantify the overall potential to stimulate economic growth in Croatia through internal or external devaluation.

In a second step, we take an industry perspective by constructing and analyzing a panel dataset at industry level[4] for 29 European countries (excluding Germany, France, and Britain as positive outliers). The panel includes industry-level export data collected by the United Nations and harmonized by the French Research Center in International Economics (CEPII). Data on FDI positions by industry are obtained from the OECD and from the Croatian National Bank. Industry-level data on wages, output, and the number of employees are provided by the United Nations Industrial Development Organization's INDSTAT database for 23 industries observed over one decade up to the year 2008. This allows us to identify key industries in which a reduction of unit labor cost would be particularly fruitful in terms of potential growth effects.

Internal devaluation

Empirical measures suggest a significantly negative correlation between labor costs and inward FDI across Croatia's peer group of countries. A one-percent internal devaluation (i.e. a decline in wages) has the potential to translate into an average increase in inward FDI by one percent. Regarding exports, the country-level correlation with labor cost turns out to be even stronger. A one-percent decline in wages correlates with an increase in exports by 1.27 percent. Moreover, within the peer group of countries, the combined effects of the additional inward FDI and exports that can be induced by a 10 percent decline in average wages correlate with an annual growth in GDP by an additional 1.18 percentage points over a period of 10 years.

External devaluation

Economic effects similar to those achieved *via* an internal devaluation can be triggered by an appropriate exchange rate policy: A devaluation of the kuna (Croatia's currency) would make Croatian goods prices and wages cheaper relative to other countries. Such a monetary policy would also imply that the Croatian economy becomes relatively more competitive, and would be able to attract additional inward FDI and expand exports. An external devaluation can spark a similar endogenous circle of economic interdependencies as an internal one, leading to a sustainable increase in wages and GDP over the long run. Drawing on the same regression specifications used to quantify the expected effects of an internal devaluation, the magnitude of an external currency devaluation needed to achieve an equivalent long-run outcome in terms of GDP per capita growth can be quantified. Estimates suggest that, in order to generate the same effect on GDP per capita via increased inward FDI and exports that could be achieved with a 10 percent decline in labor costs, the kuna would have to depreciate by approximately 17.19 percent. A viable compromise for decision-makers could be a mixed strategy combining both external and internal devaluation, choosing appropriate adjustment magnitudes along each of the two margins.

An industry perspective

First, the average aggregate correlations between labor cost and FDI and exports are confirmed by our

[3] To facilitate an exact identification of causal effects, an instrumental variable approach would be needed. However, an adequate instrument – one which, conditional on other covariates, is correlated with the respective endogenous explanatory variables but at the same times satisfies the exclusion restriction, i.e., is not correlated with the error term in the regression equation – could not be provided for the scope of this analysis.

[4] Industries are defined according to the two-digit ISIC Rev. 3 industry classification.

industry-level data in both sign and magnitude, suggesting overall consistence with the aggregate data available for a longer time horizon. Second, we use the industry-level data to examine the relationship between wages per capita, inward FDI, and exports for individual industries. It turns out that the point estimates for the correlations of labor costs with inward FDI and exports indeed vary significantly between industries.

An over-proportionally strong response of inward FDI to wage reductions can be expected in the manufacturing industries for *motor vehicles* (ISIC-34), *radio, television and communication equipment* (ISIC-32), *rubber and plastics products* (ISIC-25), *coke, refined petroleum products and nuclear fuel* (ISIC-23), *office, accounting and computing machinery* (ISIC-30) and *fabricated metal products* (ISIC-28), while in other industries inward FDI correlates less than proportionally, but still largely significantly. Notably, Croatian per capita wages rank highest among its peer group in each of these industries. Thus, there is considerable scope for improvements in competitiveness to attract additional inward FDI, increase GDP, and boost employment, resulting in sustainable wage growth in the long run.

A significantly positive response of exports to wage reductions occurs in *textiles* (ISIC-17), *wearing apparel* (ISIC-18), *leather, luggage, handbags, saddlery, harness and footwear* (ISIC-19), *wood and cork products (except furniture)* (ISIC-20), *paper and paper products* (ISIC-21), *other non-metallic mineral products* (ISIC-26), *fabricated metal products* (ISIC-28) and *electrical machinery and apparatus* (ISIC-31). Empirical measures further suggest that a 1 percent decline in per capita wages has very heterogeneous effects on exports across Croatia's peer countries, ranging from an average increase of 0.06 percent in Latvia to 1.8 percent in Lithuania. Among its peer group, the effect is above average in Croatia, with 1.5 percent. Successful FDI attraction *via* increased competitiveness can be supported by additional flanking measures such as privatizations and labor market and banking sector reforms.

Conclusion

Croatia has experienced a dramatic slowdown in FDI inflows and exports for several years, in particular after the financial crisis hit in 2008. A major reason for Croatia's economic weakness can be found in its relatively high labor costs, which have made the country uncompetitive after its integration into the EU.

To escape this situation, Croatia's economy can be stimulated by either an external or an internal devaluation. We emphasize the potential effects of an internal devaluation and provide an estimate for the *equivalent* external devaluation required to obtain economic effects of the same order of magnitude. Average effects on FDI inflows and exports originating from labor cost reductions can be derived from similar policies observed in comparable new EU member countries and candidates.

Overall, Croatia can expect an additional annual growth in GDP of around 1.18 percentage points if labor costs are reduced in the short run by 10 percent, and if this adjustment is kept in place over a longer period. The main reason behind this annual growth effect is an increase in FDI inflows and growing exports due to improved competitiveness.

To maximize the impact of an internal devaluation, competitiveness should be increased particularly in those sectors where inward FDI and exports react strongly. While an internal devaluation will increase Croatia's attractiveness for foreign investors, it is important to simultaneously reform investment policies for foreigners. The observed rise in FDI inflows in similar countries, such as Slovakia or the Czech Republic, after an internal devaluation, was accompanied by privatization programs that enabled foreign investors to acquire domestic facilities and to modernize those acquisitions.

A rise in FDI inflows will increase capital investment, leading to a steady rise in labor productivity. Hence, maintaining labor costs on a competitive level relative to Croatia's peer group of countries offers the chance to achieve a sustainable GDP growth path with a steady decline in unemployment. Once the current stagnation is overcome, rising productivity in principle offers an opportunity to increase wages. The challenge for politicians will be to resist this temptation in the initial years, as it could foil a sustainable economic recovery.

Finally, the effects outlined are partial effect considerations. From a political point of view, a reasonable combination of an internal and external devaluation

permits a balanced distribution of economic costs between different social groups.

References

Bernard, A.B. and J.B. Jensen, (1999), "Exceptional Exporter Performance: Cause, Effect, or Both?", *Journal of International Economics* 47, 1–25.

Bustos, P. (2011), "Trade Liberalization, Exports, and Technology Upgrading: Evidence on the Impact of MERCOSUR on Argentinian Firms", *American Economic Review* 101, 304–340.

Lileeva, A. and D. Trefler, (2010), "Improved Access to Foreign Markets Raises Plant-level Productivity … For Some Plants", *Quarterly Journal of Economics* 125, 1051–1099.

Melitz, M. (2003), "The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity", *Econometrica* 71, 1695–1725.

Van Biesebroeck, J. (2005), "Exporting Raises Productivity in Sub-Saharan African Manufacturing Firms", *Journal of International Economics* 67, 373–391.

Wage Determination and Employment Adjustment in Croatia

Michael Weber*

Introduction

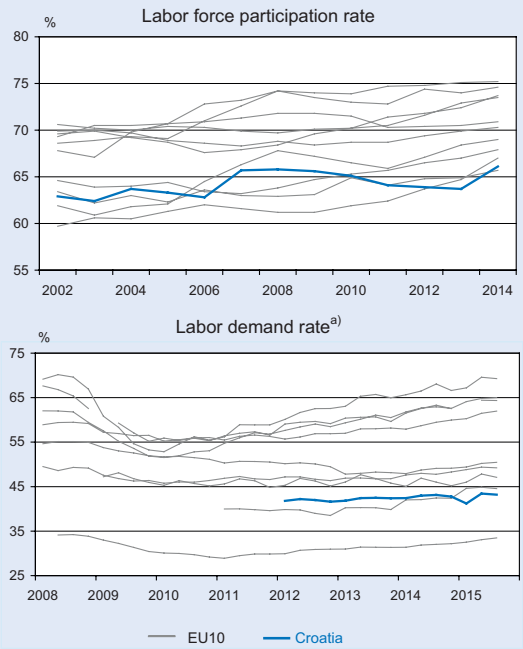
Croatia suffers from comparably low labor force participation rates and low labor demand. According to Eurostat (2016), in 2014, only two-thirds of the population of working age (15–64 years) was officially active in the labor market, while Croatian public and private employers offered jobs for less than half of the population of working age (see Figure 1). In consequence, Croatia experienced an inordinately high unemployment rate of 17.5 percent. These poor labor market outcomes, even in comparison to its peer countries, the EU10,[1] are not solely a result of the recent economic crisis, but rather reflect structural weaknesses both on the side of labor supply as well as on the side of labor demand. This article investigates aspects that explain Croatia's low labor demand.

Two major obstacles to employment growth prevail in Croatia: labor costs that are not in line with labor productivity, and costly and cumbersome employment adjustment procedures. This was particularly evident during and after the recent crisis, when wages in Croatia adjusted more slowly to changes in the macroeconomic environment than in the EU10 (Orsini and Ostojić 2015). Croatian firms opted for reducing employment rather than wages, but were subsequently quite sluggish in hiring new workers, partially because of high hiring and firing costs (Kunovac and Pufnik 2015).

To better understand the mechanisms behind these stylized facts, I present Croatian labor market institutions involved in wage determination (section 2) and employment adjustment (section 3), taking into account the most recent labor market reforms, which were introduced in 2013 and 2014. In each section, I discuss the implications of the relevant labor market institutions for Croatia's employment and international competitiveness. I conclude with some policy recommendations.

Figure 1

Labor supply and labor demand in Croatia and the EU10



[a)] Sum of occupied jobs and open vacancies relative to population at working age (15–64 years).

Sources: Eurostat (2016); own calculations.

Wage determination

Institutions

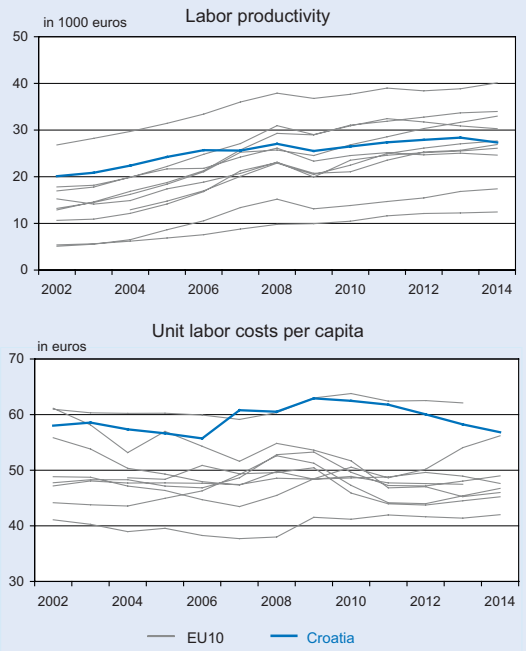
Compared to the EU10, which have a similar productivity level, unit labor costs in Croatia are relatively high (see Figure 2). In 2014, Croatia's labor productivity was similar to Latvia's and Lithuania's, but its unit labor costs were more than 25 percent higher than in these two countries. This is partly a consequence of the Croatian wage setting system, which entails a stat-

* Ifo Institute.

[1] In this text, the EU10 refer to Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia.

Figure 2

Labor productivity and unit labor costs per capita in Croatia and the EU10



Sources: Eurostat (2016); own calculations.

utory minimum wage, collective bargaining, and a substantial public sector wage premium that puts upward wage pressure on the private sector.

The 2015 statutory minimum wage in Croatia has been set at 3,029.55 kunas, which equals about 38 percent of average monthly gross earnings.[2] According to the 2010 Structure of Earnings Survey (more recent data is not yet available), 9.2 percent of all employees earned less than 105 percent of the statutory minimum wage (European Commission 2015). This is one of the highest shares among all EU countries and implies that many employers struggle to pay their employees such high wages. Since 2013, the minimum wage is discretionarily determined by the government after consultation with the social partners, though the minimum wage may not be reduced.

For 50 to 60 percent of all Croatian employees, wages above the minimum wage are directly determined by collective agreements. The share is higher in the public sector (70 percent) than in the private sector (45–55 percent) (see Kunovac and Pufnik 2015). Collective agreements are most often concluded at the firm level; there are only a few sectoral and national collective agreements. Sectoral agreements may be extended by ordinance to non-signatory parties in the same sector. Collective bargaining in Croatia shows a medium degree of centralization, with a low degree of coordination within and across sectors (Eurofund 2016). Additionally, industrial relations are characterized by mutual distrust (see Seperic 2015).

Collective agreements are particularly relevant in the public sector, where they stipulate wages increases by 0.5 percent for each year of tenure (Orsini and Ostojić 2015). The public sector wage premium, conditional on worker characteristics, amounts to 5 percent; in state-owned enterprises, the conditional wage premium totals 7 percent (Nestić *et al.* 2015). Due to their large share in total employment (2014: 27 percent and 37 percent, respectively; see CBS 2015b), public sector and state-owned firms put upward wage pressure on private firms, in particular in the tradable sector (see e.g. Orsini and Ostojić 2015).

Discussion

Croatia's wage policy is insider-biased, deteriorates the country's external competitiveness and deters internal labor demand. The statutory minimum wage sets an income floor for all employees, but prevents job-seekers whose productivity lies below the minimum wage from making any earnings. Thus, the minimum wage hinders employment of the most vulnerable workers: the young, the low-skilled, and the long-term unemployed. Reduced minimum wage rates for these workers would help to integrate them into employment.

The minimum wage also deters labor demand in sectors or regions whose average productivity is fairly low. It should therefore be reduced at least in sectors (and regions) with below-average productivity. Sectoral minimum wages, stemming from collective agreements, exist, for instance, in Germany and Denmark. In the latter, the system of implicit minimum wages is perceived to be more efficient than a statutory national minimum wage, and to ultimately enhance productivity (McLaughlin 2009). Actually, sector-specific minimum wages exist also in Croatia in sectors where the government has extended collective agreements to non-signatory parties. This tool can be used more frequently, so that a uniform statutory minimum wage becomes obsolete. This would, however, require more coordination of the industrial relations than is currently observed. Also, priority rules have to

[2] In the first ten months of 2015, average monthly gross earnings in Croatia amounted to 8,031 kunas (CBS 2015a).

be applied if there are several collective agreements by competing unions within the same sector. In Germany, for instance, only collective agreements covering at least 50 percent of all employees in an industry can be extended to non-signatory parties in that industry (Frings 2013). In sectors not sufficiently addressed by the social partners, no minimum wages are to be set. In these sectors, implicit minimum wages will result from the unemployment benefit and from the wage schedules of other sectors with minimum wages. In fact, minimum wages would become immediately obsolete if workers possessed skills in occupations that meet the demands of Croatian firms, and if workers were completely mobile across sectors and occupations. Workers' mobility would ensure an efficient allocation of labor across sectors, making wage schedules align across sectors and with workers' productivity. This would help to fight undeclared work if wages in the informal sector happened to be lower than those stipulated by the statutory minimum wage and the collective bargaining system. It would also help to restore Croatia's international competitiveness.

Currently, however, Croatia's international competitiveness is under risk by wage spillovers from the large public sector on the exposed tradable sector. This is in contrast to most EU10 countries, which experience wage spillovers in the other direction, from the private to the public sector (D'Adamo 2014); this is also the case of successful exporting countries like Germany and Austria (European Commission 2014). Croatia's case results from the unfavorable combination of high unionization and low coordination. The Nordic economies, for instance, combine a highly unionized public sector with a highly centralized bargaining system (see Lindquist and Vilhemsson 2006). Like Croatia, they exhibit spillovers from the public sector onto the tradable sector, but, in contrast to Croatia, wage setting in the public sector takes these spillovers into account. A more coordinated bargaining system would therefore lift the upward wage pressure from the tradable sector, and would therefore help to stabilize Croatia's international competitiveness.

Employment adjustment

Institutions

Until recently, Croatia's hiring and firing regulations were very strict (rank 124 out of 144 countries according to the Global Competitiveness Report; see Schwab 2012). After deregulating the organization of work both along the extensive and the intensive margins in 2013 and 2014, Croatia's employment protection index is now in the range of most other OECD countries (European Commission 2015).

Employees can be dismissed for misconduct, on personal grounds or on business grounds (see Kunovac 2014, for a detailed exposition). The employer has to notify in advance the worker and the workers' council about the dismissal. In firms with more than 20 employees, a worker can be fired for reasons other than misconduct only if, after exhausting all retraining possibilities, it is not possible to assign him or her to another task. In case of redundancy dismissals, priority rules apply as to which worker is to be dismissed. After a redundancy dismissal, the employer may not hire another worker for the same job within six months. Further regulations apply in case of collective dismissals. If a dismissal is ruled unlawful, but the employment contract is judicially terminated, the employer has to pay damage compensation of at most eight contractual salaries.

Even in the case of legal dismissals, employers must make mandatory severance payments for any termination for personal or business reasons of an employment contract that has lasted for at least two years (see Gotovac *et al.* 2013). The severance payment amounts to at least one-third of the average monthly salary for each complete year of work with that employer, and up to six average monthly salaries of that employee. Even higher severance payments may be stipulated in collective agreements. Particularly generous severance payments are agreed upon in the public sector, while employers in the private sector seek to circumvent severance payments, for instance by terminating the contract before fulfilling the two-year waiting period or resorting to fixed-term employment.

Fixed-term employment was deregulated in 2013. Entering into a fixed-term contract for the first time is no longer subject to time limits or objective reasons. Subsequent fixed-term contracts, however, can be concluded only for objective reasons and only for a total employment duration not exceeding three years (see Kunovac 2014).

Discussion

Economic theory and empirical evidence draw a clear picture of the effects of employment protection legis-

lation (EPL; see World Bank 2011, for a detailed discussion): it reduces job destruction, thereby increasing the incentive to invest in firm-specific human capital, and hence positively affecting labor productivity. However, employers wary of the monetary (e. g. severance payments) and non-monetary (e. g. notice periods, trials) costs of EPL are more reluctant to hire new workers when EPL is stricter. This hinders job creation and job re-allocation, and thereby slows down labor productivity growth.

Moreover, Croatia's recent labor market reforms have nurtured labor market segmentation between highly protected permanent staff, mostly hired before 2013, and weakly protected fixed-term employees, often hired after 2013. In 2014, 85 percent of all new employment contracts were entered into for only a limited period (European Commission 2015). Such labor market segmentation may have unintended socio-economic side-effects, such as lower training incidence (García-Serrano and Malo 2013) and lower wages for those under temporary employment (Boeri 2011), and delayed family formation (Auer and Danzer 2016). As for the minimum wage, the system of strict EPL for permanent workers and flexible use of fixed-term contracts often benefits prime-aged workers and harms the more disadvantaged ones (young, low-skilled, long-term unemployed).

To overcome the problem of labor market segmentation, the levels of EPL of open-ended and of fixed-term contracts have to be harmonized. As a first step, the current system of mandatory severance payments for open-ended contracts needs to be abandoned. It is both inefficient and superfluous. Inefficient, because the current minimum wage legislation causes wages to be downward rigid, severance payments thus inducing an unambiguously negative effect on overall employment (see Boeri *et al.* 2013; Garibaldi and Violante 2005). Superfluous, because the key rationale behind severance payments does not apply in Croatia: they are to provide income protection for dismissed workers and employment protection for employees, reassuring them that investments in firm-specific human capital are worthwhile (Holzmann *et al.* 2012), but income protection in Croatia is provided by the social welfare system, and employment protection by labor law. If workers questioning their dismissal can appeal to labor courts, and if these courts rule neutrally and in a timely manner, there is no need for further employment protection through mandatory severance payments. This does not rule out damage compensation in case of unjust dismissals. If mandatory severance payments are eliminated, firms can anticipate lower non-wage labor costs, which would likely increase job creation. Moreover, there would be fewer incentives to prefer fixed-term employment contracts over open-ended contracts, reducing labor market segmentation.

Conclusion

Croatia's below-average labor demand is mainly due to two structural factors: the wage level and employment adjustment costs. Labor costs are relatively high compared to productivity, which hampers international competitiveness. In order to stimulate employment, wages and productivity need to become better aligned with each other. If productivity cannot be raised towards wages, wages have to be reduced toward productivity, at least for workers with limited productivity. To achieve this, the uniform statutory minimum wage should be substituted by sectoral minimum wages (if any), and wage rates below the minimum wage level should apply for vulnerable workers. The nominal downward rigidity of the minimum wage needs to be abolished. Wage-setting above the minimum wage should be better coordinated within and across sectors. Trade unions and employers, particularly in the public sector, have to consider the impact of their wage bargaining on Croatia's international competitiveness as well as on the employment prospects of those currently not in work.

Additionally, the complexity and duration of procedures related to employment adjustment need to be reduced. Most importantly, the regime of mandatory severance payments for justified dismissals needs to be abandoned, as this would significantly reduce the anticipated costs when hiring a worker. Furthermore, the hiring ban for firms after dismissing workers for business reasons should be eliminated. This will speed up employment adjustment and subsequent productivity growth.

These reforms should be jointly pursued by the Croatian government and the social partners to improve their acceptance among the population. Implementation should consider the results of the upcoming monitoring analyses of the 2013 and 2014 reforms and of the minimum wage effects. Furthermore, complementary structural labor market reforms should continue, for instance the envisaged reform of the tax-

and-transfer system or the restructuring of the Croatian employment service.

References

Auer, W. and N. Danzer (2016), "Fixed-Term Employment and Fertility: Evidence from German Micro Data", *CESifo Economic Studies*, forthcoming.

Boeri, T. (2011), "Institutional Reforms and Dualism in European Labor Markets", in: Card, D. and O. Ashenfelter (eds.), *Handbook of Labor Economics,* Volume 4, Part B, Amsterdam: Elsevier, 1173–1236.

Boeri, T., P. Garibaldi and E. Moen (2013), *The Economics of Severance Pay,* IZA Discussion Paper 7455.

Croatian Bureau of Statistics (CBS, 2015a), *Average Monthly Gross Earnings of Persons in Paid Employment for October 2015,* First Release No. 9.1.2/10, 30 December.

Croatian Bureau of Statistics (CBS, 2015b), *Statistical Yearbook of the Republic of Croatia,* December 2015, Zagreb.

D'Adamo, G. (2014), "Wage Spillovers across Sectors in Eastern Europe", *Empirical Economics* 47, 523–552.

Eurofund (2016), http://www.eurofound.europa.eu/observatories/eurwork/collective-wage-bargaining/context.

European Commission (2014), *Government Wages and Labour Market Outcomes,* European Economy Occasional Papers 190.

European Commission (2015), *Macroeconomic Imbalances, Country Report – Croatia 2015,* European Economy Occasional Papers 218.

Eurostat (2016), *Eurostat Dissemination Database,* http://ec.europa.eu/eurostat/data/database.

Frings, H. (2013), "The Effect of Industry-Specific, Collectively Bargained Minimum Wages", *German Economic Review* 14, 258–281.

García-Serrano, C. and M.A. Malo (2013), *Beyond the Contract Type Segmentation in Spain: Country Case Studies on Labour Market Segmentation,* ILO Working Papers 481498.

Garibaldi, P. and G.L. Violante (2005), "The Employment Effects of Severance Payments with Wage Rigidities", *Economic Journal* 115, 799–832.

Gotovac, V., S. Drezgić and U. Schuh (2013), *Analysis of the Severance Pay Scheme in the Republic of Croatia: Current Arrangements and Changes to Be Considered,* World Bank Report 81626.

Holzmann, R., Y. Pouget, M. Vodopivec and M. Weber (2012), "Severance Pay Programs around the World: History, Rationale, Status, and Reforms", in: Holzmann, R. and M. Vodopivec (eds.), *Reforming Severance Pay: An International Perspective,* Washington DC: World Bank.

Kunovac, M. (2014), "Employment Protection Legislation in Croatia", *Financial Theory and Practice* 38, 139–172.

Kunovac, M. and A. Pufnik (2015), *Features of the Labour Market and Wage Setting in Croatia: Firms Survey Results,* Survey S-19, Croatian National Bank, Zagreb.

Lindquist, M.J. and R. Vilhelmsson (2006), "Is the Swedish Central Government a Wage Leader?", *Applied Economics* 38, 1617–1625.

McLaughlin, C. (2009), "The Productivity-Enhancing Impacts of the Minimum Wage: Lessons from Denmark and New Zealand", *British Journal of Industrial Relations* 47, 327–348.

Nestić, D., I. Rubil and I. Tomić (2015), "Analysis of the Difference in Wages between the Public Sector, State-Owned Enterprises and the Private Sector in Croatia in the Period 2000-2012", *Privredna kretanja i ekonomska politika* 24, 7–50.

Orsini, K. and V. Ostojić (2015), *Wage Dynamics in Croatia: Leaders and Followers,* European Economy Economic Brief 3.

Schwab, K. (ed., 2012), *The Global Competitiveness Report 2012–2013: Full Data Edition,* World Economic Forum.

Seperic, D. (2015), *2014 Annual Review of Labour Relations and Social Dialogue in South East Europe: Croatia,* Belgrade: Friedrich-Ebert-Stiftung.

World Bank (2011), *Employment Protection Legislation and Labor Market Outcomes: Theory, Evidence and Lessons for Croatia,* Washington DC: World Bank.

Activating the Unemployed: Lessons for Croatia

Martin Werding*

Labour-market performance in Croatia is extremely sluggish today, triggered not only by the Great Recession, but also for reasons which appear to be fundamental, or 'structural', in their nature. Therefore, activating those who are currently in long-term unemployment or entirely outside the labour force is a task deserving special attention. Relying on the international experience, two types of measures appear to be particularly important for this purpose: changes in the design of existing benefit schemes and stricter use of active labour-market policies, including the introduction of work requirements for benefit recipients and the organization of public works programmes, either temporarily or on a more permanent basis.

Economic inactivity

Compared to most other countries in the EU28, labour-force participation and employment are rather low in Croatia, while unemployment is high. Two further aspects stand out as indicators for the low level of (formal) activity in Croatia. Among the unemployed, the share of those in long-term unemployment is extremely high, and the shadow economy appears to be quite sizable.

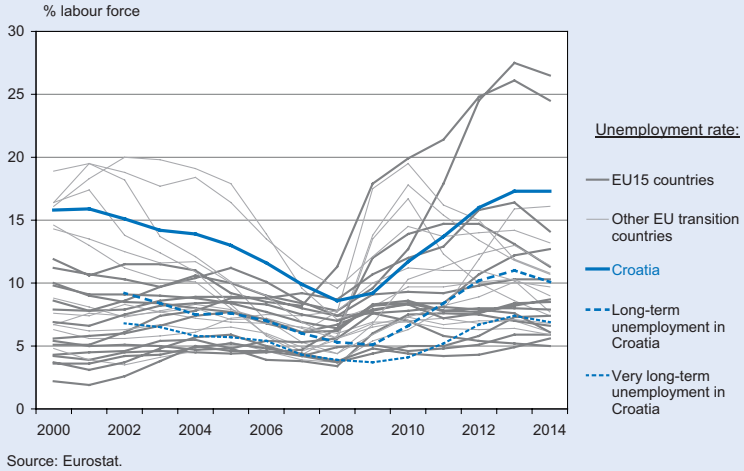
Figure 1 shows recent trends in unemployment rates across the EU. The curve representing Croatia (blue solid line) is compared to rates for EU15 countries (thick grey lines) and for other EU transition countries (thin grey lines). In addition, the figure displays Croatian results for two sub-groups, viz. those in 'long-term unemployment' (exceeding one year at an individual level; blue dashed line) and in 'very long-term unemployment' (exceeding two years; blue dotted line). It can be seen that a huge fraction of Croatian unemployment has effectively turned into long-term unemployment in recent years. Long-term unemployment in Croatia in fact exceeds total unemployment in many other EU countries, including a number of transition economies.

By its nature, accounting for the shadow economy is difficult. Using the 'MIMIC'[1] approach, its size can be estimated econometrically in a way which should at least be consistent across countries and over time. Figure 2 shows that, according to a recent update of such estimates (Schneider 2015), Croatia (blue line) hosts one of the largest informal sectors across the EU. Even among the new member states, Croatia almost takes the lead in this respect, being close to Romania and second only to Bulgaria. Work in the shadow economy can assume various forms.[2] In any case, competition of regular employment with the

[1] 'Multiple indicators multiple causes' (Schneider and Engste 2000).
[2] Not only unregistered work, but also unregistered overtime or unregistered 'over-pay', implying that individuals are officially paid the minimum wage, while they actually receive substantially higher pay, free of taxes and social insurance contributions.

Figure 1

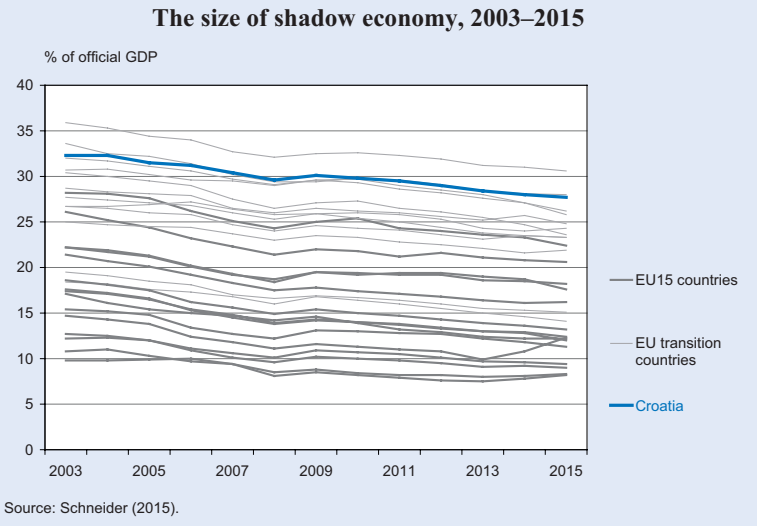
Unemployment and lon-term unemployment, 2000–2014



Source: Eurostat.

* Ruhr University, Bochum.

Figure 2



Source: Schneider (2015).

shadow economy is highly distorted and really difficult to win.

A long history of ups and downs in structural unemployment in various countries has sparked a huge literature on how to activate those in unemployment or even non-employment (see e.g. Werding 2006). Two aspects of policies designed for this purpose have turned out to be of highest significance, in order to go to the root of such problems. On the one hand, major changes in existing programmes with 'passive' benefits are needed to establish financial incentives for the unemployed to re-enter regular jobs. On the other hand, active labour-market policies and an activating orientation of the benefit administration matter as well, in fact even more than the design of benefits (Andersen and Svarer 2007; Werding and Konrad 2012). To requalify individuals from long-term unemployment for active labour-market participation and to target those in irregular work, strong measures of this type need to be considered, such as public work programmes combined with explicit work requirements.

Design of benefit schemes

In Croatia, benefit schemes that are relevant for solving the problem of persistent long-term unemployment are unemployment insurance and, mainly, general social assistance. Further benefits, which are 'passive' by definition and may also contribute to the low level of economic activity, are derived from the pension system where, in recent years, there has been a massive inflow into disability and early retirement benefits (Werding and Primorac 2016). Following a short period of time during which a review of their status might still be an option, these individuals may be definitely lost for any reactivation. For the other programmes, changes that 'make work pay' should be conceivable.

In terms of benefit entitlements, Croatian unemployment insurance is not particularly generous, certainly not if unemployment exceeds three months (see MISSOC 2015 for details). However, the duration of benefit entitlements is governed by a differentiated scheme depending on the duration of earlier employment spells, by which a substantial share of the unemployed has entitlements exceeding one year (after more than fifteen years of employment). Currently, aggregate expenditure on this scheme amounts to about 2.5 percent of total public expenditure, or 0.6 percent of GDP (Croatian Employment Service 2013).

Once entitlements *vis-à-vis* unemployment insurance have expired, individuals can be entitled to receive means-tested social assistance during a further, and ultimately unlimited, period of time (again, see MISSOC 2015). Typically, social assistance benefits are combined with housing allowances, and beneficiaries have access to health insurance benefits. The scheme has a far broader coverage (including handicapped persons, single parents and persons who are not of working age), but it effectively supports quite a number of individuals who are, or could be, job-seekers given their age and health status. In recent years, when unemployment increased and in many cases turned into long-term unemployment, aggregate expenditure on this scheme increased to about 10.3 percent of total public expenditure, or 4.3 percent of GDP (Ministry of Finance 2015).

Core elements in 'welfare-to-work' policies that have been discussed and applied elsewhere are 'in-work benefits' topping up wages of individuals with low earnings, i.e. subject to the condition that they are no longer inactive (for a review of existing instruments see Sinn *et al.* 2006). The international model for benefits of this type is the US Earned Income Tax Credit (EITC). Another interesting example is given by the UK Work Tax Credit (WTC; formerly: Working

Families' Tax Credit, WFTC). Modifications to the German benefit system for the long-term unemployed enacted more recently also reflect a step in this direction.

The basic idea of all of these schemes is to create a notable difference in the financial situation of those who return to, or take up, a regular form of employment compared to those who remain inactive for an extended period of unemployment. Whatever the precise mechanism, welfare benefits are effectively no longer withdrawn on a one-for-one basis if individuals become active. Instead, withdrawal rates are reduced so that, over a certain range of low earnings, individuals receive some amount of public benefits on top of their wages, which can also be seen as a targeted wage subsidy for those whose total income could otherwise call for means-tested benefits. However, altering financial work incentives alone may not be sufficient to help individuals re-enter regular employment if they have been inactive over longer periods of time.

Active labour-market policies and public works programmes

In-work benefits already contain an element of 'active' labour-market policies which directly aim at a re-integration of job-seekers into formal employment (through training programmes, job placements, wage subsidies, etc.). While some of these instruments can be really costly, a strict case management (with active counselling, formal agreements stating job-search requirements, and the possibility of imposing benefit sanctions on those who do not co-operate) can contribute to keeping these costs under control. Furthermore, combining measures of all these kinds has proved suitable for addressing various obstacles for the long-term unemployed to seek and find regular jobs. Some countries have even gone so far as to establish not only active job-search requirements for benefit recipients but work requirements, together with public works programmes.

Imposing work obligations on benefit recipients who are long-term unemployed and creating corresponding work opportunities has effectively two sides. Following long periods of inactivity, individuals have often lost motivation, earlier qualifications, and a number of basic work-related habits. Therefore, programmes of this type improve on the employability of many beneficiaries. Besides, explicit work requirements by which individuals have to participate in public works programmes at least for a certain amount of time per day or per week may serve a purpose in monitoring how individuals spend their time, in order to deter them from combining benefit receipt with work in the shadow economy.

The introduction of formal work obligations in exchange for receiving welfare benefits has been considered in a number of countries, but politics has often been reluctant to go in this direction. Yet, there are examples of countries which are, or have been, in a similar situation as Croatia that have utilized this instrument rather successfully. In Latvia, a public works programme applied in the period from 2009 to 2011 served as a temporary emergency measure, when unemployment peaked in the course of the Great Recession (Hazans 2012). Hungary also used such programmes to fight high and persistent unemployment in the aftermath of the crisis. However, they were built on experience with repeated use of similar programmes that effectively goes back to the early transition period starting from 1991 (Koltai 2012).

The Latvian programme was inaugurated with considerable financial support by the European Social Fund (ESF). It was positively evaluated with respect to individual-level effects and the utilization of public funds by the World Bank (Azam *et al.* 2012). Against public concerns and criticisms, it is interesting to note that many participants perceived the programme as a safety net or as a basis for doing work that is beneficial for the community. In both countries, there has been a reduction of aggregate-level unemployment. This is probably part of a general recovery, not fully a causal effect. But both countries have much lower shares of long-term unemployment than Croatia, and these shares have declined over the past few years.

Conclusion: lessons for Croatia

Under current conditions of high-level, long-lasting unemployment, activating those who are in long-term unemployment or outside the official labour force is clearly a major sub-task within an overall agenda for increasing employment and stimulating growth in Croatia. A strong recommendation for increasing economic activity is to seriously consider the introduction of work requirements for those receiving public benefits over extended spells of unemployment. To make this strategy effective, the organization of public

works schemes is also required.[3] For those who do not comply with these rules, a (gradual scheme of) benefit sanctions should be introduced by which benefits can be temporarily reduced or even withdrawn.

In addition, further changes in existing benefit programmes appear to be needed. For example, with respect to existing benefit schemes, reducing the maximum duration of unemployment insurance benefits might be helpful in fighting long-term unemployment, combined with a stricter case management for those in extended spells of unemployment. In social assistance, elements of 'in-work benefits' should be introduced, e.g. through the reduction of benefit withdrawal rates *vis-à-vis* own earned income from 100 percent to 80 percent, like in Germany, or to between 70 and 50 percent, following the examples of the US EITC or the UK WTC. To limit fiscal costs, reduced withdrawal rates can be concentrated on certain ranges of earned income, mainly incentivising recipients to take up jobs with longer of working hours.[4]

Experience gathered in other transition countries suggests that public works schemes should aim at comprehensive coverage of geographic regions and individuals in the target group. They should be operated in a decentralised manner, e.g. at a municipal level, but in close co-operation with regional branches of public employment services, with an interactive exchange of experience between all participating bodies, and with strong political support from the central government against all kinds of resistance and public concerns. Participants should only work for municipalities themselves or in co-operation with non-profit organizations and other government institutions to avoid (criticisms of potential) displacement effects for regular jobs that might arise at a sectoral level.[5] Last but not least, these programmes could be introduced as a temporary ('emergency') measure, until labour-market performance has significantly improved. They could form a new standard instrument of active labour-market policies later on, but this decision does not have to be taken upfront.

[3] Croatia has some experience in this area, based on the National Employment Action plans (NEAP) from 2006 onwards, albeit with programmes that were very limited in scope (Matković 2012).

[4] For recommendations regarding the pension scheme where inflows into disability and early retirement should be reduced, see Werding and Primorac (2016).

[5] These effects cannot arise at an aggregate level because saving public expenditure on issues that are taken care of by the work programmes necessarily frees up resources which can be used elsewhere. Even sectoral effects can be kept under control if public works concentrate on non-profit activities for which municipalities simply haven't got the funds under current economic conditions.

References

Azam, M., C. Ferré and M.I. Ajwad (2012), *Did Latvia's Public Works Program Mitigate the Impact of the 2008–2010 Crisis?*, World Bank Policy Research Working Paper 6144.

Andersen, T.M. and M. Svarer (2007), "Flexicurity: Labour Market Performance in Denmark", *CESifo Economic Studies* 53, 389–429.

Croatian Employment Service (2013), *2012 Yearbook,* Hrvatski zavod za zapošlavanje: Zagreb.

Hazans, M. (2012), *What Works When the Labour Market Doesn't?,* Peer Review Paper, European Commission, DG Employment, Social Affairs and Inclusion.

Koltai, L. (2012), *Work Instead of Social Benefits? Public Works in Hungary*, Peer Review Paper, European Commission, DG Employment, Social Affairs and Inclusion.

Matković, T. (2012), *As If Nothing Had Happened: Increasing Scope But Retaining the Tone of Public Works,* Peer Review Paper, European Commission, DG Employment, Social Affairs and Inclusion.

Ministry of Finance of the Republic of Croatia (2015), *Consolidated General Government,* http://www.mfin.hr/en/time-series-data.

MISSOC (2015), *Mutual Information System on Social Protection,* http://www.missoc.org.

Schneider, F. and D. Enste (2000), "Shadow Economies: Size, Causes and Consequences", *Journal of Economic Literature* 38, 73–110.

Schneider, F. (2015), *Size and Development of the Shadow Economy of 31 European and 5 other OECD Countries from 2003 to 2015,* Linz: Johannes-Kepler-University, mimeo.

Sinn, H.-W., C. Holzner, W. Meister, W. Ochel and M. Werding (2006), *Redesigning the Welfare State: Germany's Current Agenda for an Activating Social Assistance,* Cheltenham and Northampton, MA: Edward Elgar.

Werding, M. (ed., 2006), *Structural Unemployment in Western Europe: Reasons and Remedies,* Cambridge, MA: MIT-Press.

Werding, M. and K.A. Konrad (2012), "Reforming the European Welfare State", in: Büttner, T. and W. Ochel (eds.), *The Continuing Evolution of Europe,* Cambridge, MA: MIT-Press, 71–118.

Werding, M. and M. Primorac (2016), *Old-age Provision: Policy Options for Croatia,* CESifo Working Paper 5761.

International Experiences on Labor Market Reforms

Rigmar Osterkamp*

Introduction

It is only recently that the institutional characteristics of an economy and, particularly, institutional features of the labor market have been recognized as potentially important determinants of labor market outcomes. Paul Krugman, for instance, suggested in 1993 that "the level of employment is a macroeconomic issue, depending in the short run on aggregate demand and depending in the long run on the natural rate of unemployment, with microeconomic policies like tariffs having little net effect".

In the meantime, such a view has lost practically all its currency. New developments in microeconomic theory and particularly in the theory of the labor market (e.g. incorporating matching, searching, signaling, shirking), as well as a large number of empirical studies, have shown that institutional (sometimes called 'structural') features of the economy and the labor market are key determinants – or at least important co-determinants – of economic growth and satisfactory labor market outcomes.

This article looks at the effects of labor market institutions and their reforms on employment outcomes by reviewing the results of systematic international empirical studies, mainly about European countries. The last section summarizes the main findings and draws conclusions for a Croatian labor market reform policy.

International comparisons of labor market institutions and their reforms

The following section presents stylized facts about the findings of econometric studies conducted in the past 10 years, including two meta studies. The meta studies comprise the results of altogether more than 100 country-comparative econometric studies.

General institutional reforms and employment outcomes

The most important determinants of per capita growth are general institutional characteristics – such as political stability, respect of property rights and administrative quality. The system and rates of individual and corporate taxation also play an important role.

General structural reforms which clearly define and increase the range of options market participants have at their disposal, combined with specific reforms of labor market institutions, lead to positive outcomes also in the labor market. Empirical evidence does not support the view that such reforms result in an overall destruction of jobs, higher inequality and more poverty. Quite the contrary. One reason is that simultaneously implemented general and labor market reforms reinforce each other's positive effects. Another reason is that institutional reforms of the labor market impact not only directly but also indirectly (*via* the effects of the reforms on economic growth) on labor market outcomes.

Labor market institutions and their reforms: effects on employment outcomes

A large majority of the empirical studies analyzed come to the conclusion that employment, job creation and job re-allocation are negatively associated with the size of the tax wedge, the size of unemployment benefits, the duration of benefits, the level of the minimum wage and a dominance of open-ended contracts. Higher labor market flexibility turns out to be advantageous for the workers and the economy, at least in the medium- and long-run, but not necessarily in the short-run, particularly during a crisis.

The between-countries difference in the flexibility of labor market institutions suggests that a higher labor market flexibility is associated – at least after a period of adjustment – with a significantly better response of

* Bavarian School of Public Policy, Munich.

labor markets when the economy is hit by external shocks. By contrast, lower labor market flexibility is associated not only with higher unemployment but also with a less labor-intensive production and a higher 'employment threshold' (i.e. a higher rate of economic growth needed to keep employment at least stable).

In order to assess the impact of external shocks on labor market performance it is also important to differentiate between the short- and the medium- to long-run perspective. The short-term negative impact of external shocks on employment is larger in countries with more flexible labor markets, while the medium-term effect is larger in countries with more rigid labor markets. Labor market rigidity tends to leave young workers unemployed in relatively greater numbers than older workers. This implies that an increase in labor market flexibility favors younger workers relative to older workers.

While the effects of a flexible labor market have been practically unanimously found to be positive for labor market outcomes, the evidence for the effects of union density and the degree of centralization of the wage setting process on labor market results is less clear. The reason is that both highly decentralized and of highly centralized wage settings can produce socially efficient results. An efficiency problem often arises in the intermediate situation where (small) unions have the power to protect their own workers but are not large enough to take account of the wider economic and social consequences of their actions.

A politically viable reform of the labor market is often characterized by the notion of 'flexicurity'. It consists of a combination, on the one hand, of a liberal employment protection legislation (*flexible*, i.e. not much individual protection against dismissal) and a policy of generous unemployment benefits *(secure)* with strong activating labor market policies on the other hand. This type of 'smart' policy reduces political opposition from the direct and short-run losers of reform by offering them generous benefits and a better reemployment outlook.

Two-tier reforms of employment protection

While the empirical evidence about the effects of labor market institutions suggests that increasing the share of fixed-term contracts and reducing that of open-ended contracts finally leads to more, not less employment, it is politically difficult to implement such a reform due to the impact on incumbent employees who work under open-ended contracts.

A solution for this problem has been found in a less radical procedure which is called a 'two-tier' reform. Such a reform of employment protection legislation enables firms to offer fixed-term instead of open-ended contracts – but only to additional workers, leaving the position of incumbent workers with open-ended contracts unchanged (a reform on the margin, and not on the core of existing contracts). Political resistance against a full-fledged reform of employment protection (liberalizing the core, i.e. the existing open-ended contracts) has led many European governments to pursue such a more limited aim.

Whether a reform on the margin can later be extended to a reform of the core seems to depend crucially on the relative proportion of workers with temporary and with open-ended contracts. In Europe, only Spain has so far been able to proceed from a marginal reform of employment contracts to a reform of their core, thanks mainly to the fact that the share of incumbent workers with open-ended contracts had over the years dropped to less than 50 percent of the total active population.

Effectiveness of active labor market programs

Active Labor Market Programs (ALMP) are generally associated with lower unemployment. However,

- program costs are often unknown and make even a crude cost-benefit analysis impossible;
- short-term effects of ALMP are often insignificant or even negative;
- many programs exhibit significantly positive effects only after two to three years; and
- significant effects of ALMP can be best expected from incentives and penalties.

Job-search assistance belongs to the least costly ALMP programs and has been found to be of significant impact on job-finding rates and on unemployment duration. By contrast, training – and particularly classroom training – has proven to be less effective, at least in the short term. Classroom and on-the-job training programs generate positive effects only after some years. Training most often has positive effects on re-employment and wage prospects, but the effects are of limited size. Training often is more effective when

provided within firms and in connection with counseling, start-up support and wage subsidies. A broadly-based vocational educational training is vital for the employability of young workers. Such systems, however, differ widely in Europe, making it difficult to provide easy orientation for a reform.

Public works programs seem to be the least effective type of ALMP in terms of increased long-term employment prospects. Still, during periods of mass unemployment, temporary works programs targeted to persons of low employability may be useful for mitigating income loss and maintaining a link to the labor market.

Conclusions

There is overwhelming evidence for significant effects of the institutional design of labor markets on labor market outcomes. The evidence comes both from theoretical insights and numerous empirical studies. Labor market reforms introducing more flexibility improve labor market outcomes, particularly in the medium- and long-run. However the interactions of the different elements of labor market institutions and the transmission channels from institutions to outcomes are complex and country-specific. Thus, there is no general blueprint for labor market reforms. The country-specific background and context is decisive for designing reforms of labor market institutions – and of other institutions as well. This is all the more so as economic policy reforms, and particularly reforms of the labor market, are politically highly sensitive.

A combination of policies – increasing labor and product market flexibility, as well as macroeconomic policies aimed at reducing macroeconomic volatility – has proved to be particularly efficient in enhancing employment responses to growing economic activity.

Policy proposals for labor market reforms in Croatia

Whenever a nominal currency devaluation to regain international competitiveness is politically unfeasible, an internal devaluation entailing a reduction of wages and prices in the whole economy becomes unavoidable. In such cases, it is best to start by cutting wages in the public sector and by enhancing productivity. Another, less painful, possibility is the prolongation of working time. This can take different forms: increase of daily, weekly or monthly working time, reduction of public holidays, or of days of annual paid leave.

To win public support, particularly during the difficult initial years of such a reform, such a program must be

- comprehensive, i.e. it must comprise measures on the macro level, on the micro level and in all sectors;
- socially justifiable, i.e. there should be no pure winners and no pure losers of the reform; unavoidable social hardship must be at least mitigated;
- pre-announced, so that workers, enterprises, banks and social funds can start early and adapt more quickly to the reforms.

Reforms of labor market institutions must be an important part of the reform package. Croatia's labor market institutions compare unfavorably with those of its peers, calling for their urgent reform. Reform packages of the labor market can aim to reduce political resistance through 'flexicurity' and by 'two-tier' reforms. Flexicurity combines a liberal (i.e. low) employment protection against dismissal with generous unemployment benefits. Two-tier means that firms are allowed to offer fixed-term contracts – but only to additional workers. The open-ended contracts of the incumbent workers are unaffected. Restrictions on fixed-term labor contracts should be eased. In the long-run, open ended and fixed-term contracts should be made more similar in terms of severance pay and duration. Chaining of fixed-term labor contracts should be permitted.

Labor disputes should be resolved not in the normal courts, but in a separate system of tribunals and arbitration. Tripartite agreements (government, unions, employers) can make more competitive (i.e. lower) wages politically easier, particularly when public sector wage cuts are carried out. Enterprises should have the right to opt out of centralized wage agreements. Wage subsidies should be preferred to an increase in minimum wages. Contractual wage scales should allow for suitable pay differences between young and more experienced workers.

Active labor market policies should be an integral part of a labor market reform program. The participation of unemployed workers in such measures should be obligatory. Job search assistance should be a preferred way of performing an ALMP, because it is cost-effective and has been found to have a significant impact

on job-finding rates and on unemployment duration. Training is often more effective when provided within-firm and in connection with counseling, start-up support, and wage subsidies. Temporary public jobs programs should be introduced during periods of mass unemployment, targeted to persons of low employability, since they are useful in mitigating income loss and maintaining the link to the labor market.

Reference

Krugman, P. (1993), "What Do Undergrads Need to Know about Trade?", *American Economic Review*, 83(29), 23–26.

Old-age Provision: Policy options for Croatia

Martin Werding* and
Marko Primorac**

The Croatian system of old-age provision comprises a traditional public pay-as-you-go scheme and a mandatory funded scheme which will provide increasing amounts of supplementary pensions to those entering retirement in the future. Due to the continuing economic crisis, the public scheme is currently under enormous financial strain, with a sizeable impact on central government public finances. At the same time, the level of benefits deriving from the overall system is likely to become inadequately low in the long run. This calls for a mixed reform strategy with an appropriate timing, taking care of the financial viability as well as the adequacy of old-age provision.

The current system

In Croatia,[1] public pensions are provided by a 'Bismarckian' pay-as-you-go scheme offering benefits that are related to earlier wages and to the length of individual work records. A funded 'second pillar' was added in 2002, which is financed from earnings-related contributions and operated by a number of private pension funds. When the scheme was introduced, participation in the second pillar was mandatory for individuals aged up to 40 years. Those aged between 40 and 50 years had a right to choose whether to participate or not, while those aged 50 years and older had to stay entirely with the first-pillar scheme. Full contributions to the public scheme amounted to 20 percent of taxable wages at that time and have remained constant since then. Those joining the mixed regime continue to pay the same rate, of which 5 percentage points are channelled to their private pension funds as a 'second-pillar allocation'. Benefit entitlements acquired in the public scheme are adjusted accordingly, based on effective contributions of 15 percent of wages in all subsequent years.

The statutory retirement age is 65 for males, while it is increasing from 60 to 65 for females between 2011 and 2030. Afterwards, the age threshold will be further increased to 67, for males and females alike, until 2038. Benefit assessment is based on a point system translating individual work records and life-time earnings into pension entitlements. Benefits are up-rated twice a year based on a mixed indexation rule (50 percent CPI inflation, 50 percent nominal wage growth).

The public pension scheme is not very generous in terms of average annual benefits provided,[2] but it is generous in granting access to pensions relatively early. The number of beneficiaries amounts to 130 percent of the population of pensionable age. Conversely, almost 20 percent of the population aged 20 to 64 are receiving some kind of pension benefits. The support ratio (i.e. the number of active members per beneficiary) is currently no more than 1.2, down from 3.0 in 1990. Also, the system provides minimum pensions that are relatively generous, at least when compared to average pensions.

Total expenditure of the first-pillar scheme amounted to 11.1 percent of GDP in 2014. However, contributions cover only about 55 percent of expenditure. The actual current cost rate (i.e. the contribution rate which would balance the budget) is correspondingly higher: including the second-pillar allocation of 5 percentage points, it is no less than 32.5 percent of taxable wages. Therefore, the public scheme regularly receives a subsidy from the central-government budget, amounting to 5.0 percent of GDP in 2014. The size of this subsidy compares unfavourably to the current budget deficit of 5.7 percent of GDP. In fact, the scheme has imposed a substantial burden on central-

* Ruhr University, Bochum.
** University of Zagreb.

[1] For descriptions of the system, see Nestić and Rašić Bakarić (2008); Šonje (2011) or MISSOC (2015).

[2] In 2014, the gross level of benefits (defined as average old-age pensions divided by current average taxable wages) has been about 32 percent (which is very low by international standards – see OECD 2015). The figure derives from data kindly provided by Croatian Pension Insurance *(Hrvatski zavod za mirovinsko osiguranje, HZMO)*. They are also used as an important input for long-term projections presented in below.

government finances virtually each year since 2000, the latter being under pressure also for other reasons in the current situation of a lasting crisis.

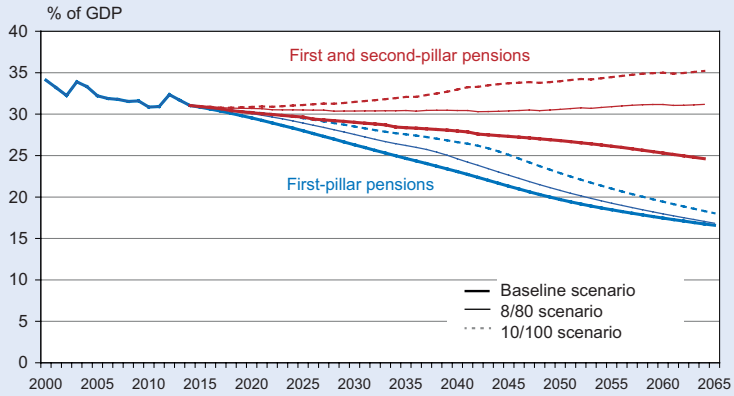
In addition, Croatia is currently faced with the prospects for a strong ageing process by which old-age dependency may roughly double over the next five decades. It may thus be highly surprising that, under current rules, public pension expenditure as a share of GDP is likely to decline considerably over the same time period (see Figure 1). Following strong fluctuations since 2000, which were due first to significant GDP growth and then to the Great Recession, simulations for a 'baseline scenario'[3] indicate that the current peak of this expenditure ratio will disappear within a few years. From 2020 onwards, the ratio will continue to decline for more fundamental reasons, with an accelerated speed in the period between 2030 and 2040.

Another important result displayed in Figure 1 relates to the state subsidy paid to the first-pillar pension scheme. Current levels of around 5 percent of GDP clearly indicate the strained situation of public pension finances. If the total contribution rate (including the second-pillar allocation) remains unchanged, the subsidy is projected to decline in line with public pension expenditure, reaching 4 percent of GDP around 2020, 2 percent around 2040 and only 0.5 percent at the end of the projection horizon.

[3] For the underlying assumptions, see Appendix.

Figure 2

Level of pension benefits (first and second pillar), 2000–2065

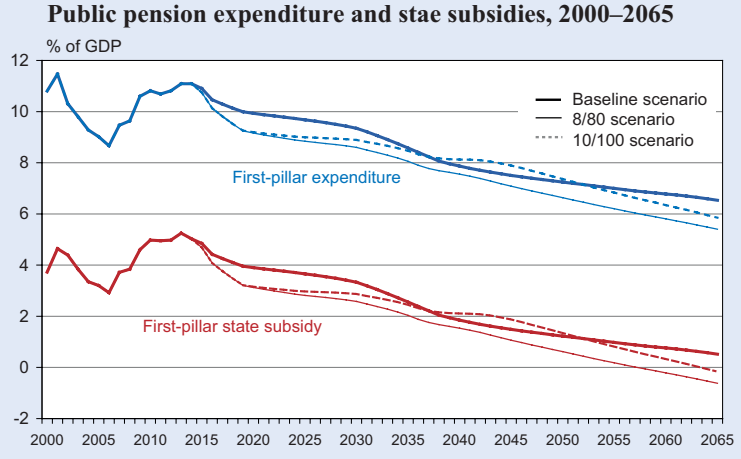


Benefit levels are assessed relating average old-age pensions to average taxable wages, both gross of taxes and social insurance contributions.
Sources: HZMO; own calculations.

To some extent, these seemingly favourable long-term trends are driven by the on-going shift towards a partially funded system by which public pensions become less important over time. However, they also result from a continuous erosion of benefit levels that is definitely not compensated by the expected increase in second-pillar pensions. Figure 2 illustrates that the gross level of public pension benefits has been low already in recent years, modified by a few discretionary changes with transitory effects. From a current 32 percent of average taxable wages it will continue to decline to less than 25 percent until 2035, less than 20 percent until 2050 and just above 15 percent at the end of the projection horizon. Supplementary funded pensions will mitigate this trend, lifting the reduction to 25 percent by 2065.

Figure 1

Public pension expenditure and stae subsidies, 2000–2065



Sources: HZMO; own calculations.

Options for reforms

Pension policy in Croatia is thus facing a twofold challenge. On the one hand, cutting costs is necessary in the short run to get the system out of the current financial strain. On the other hand, increasing benefit levels will become an issue at some point in time to ensure sustainability as well as adequacy of old-age provision in the long run. As a result, appro-

priate reforms have to be multi-faceted, and the timing of reforms will also matter.

A problem which needs to be addressed immediately is the current huge inflow of working-age individuals into disability pensions and early retirement. Measures that are suited to deal with this problem are tighter eligibility criteria for disablement and a higher age for first claiming old-age pensions. Another change that should start taking effect soon and fully unfold over the next few decades is a further increase in the statutory pension age. The latter would have relatively weak effects in the short run, but very strong ones in the long run. In a scenario resulting from reforms of this kind, state subsidies could be reduced much faster than in the 'baseline' case and would fall to zero around 2060.

However, while this result sounds like good news with respect to budgetary effects and fiscal sustainability, it is still based on a level of public pension benefits which declines considerably throughout the projection period and a reduction in the total benefit level deriving from both pillars by close to 20 percent. Basically, there are two ways of keeping up future benefit levels. Supplementary funded provisions could be strengthened by increasing the second-pillar allocation. Alternatively, the level of public pension benefits could be stabilized by replacing the current, mixed rule for benefit up-ratings with stronger, or even pure, wage-indexation. Both approaches have their pros and cons.

Taking together these considerations, a mixed strategy for cutting pension expenditure in the short run and (re)increasing future benefit levels can be conceived of. It should combine a further shift towards partial prefunding that is initiated soon and pursued unwaveringly with (temporary) increases in benefit up-ratings which can be used flexibly, depending on what the benefit level appears to require and what other circumstances allow for. To illustrate the potential effects, we look at two scenarios which are built on the baseline scenario (see, again, Appendix), modified by the following assumptions:

- Age specific rates of entry into disability pensions and early retirement are reduced (to 50 percent of their baseline values until 2019) and the unemployment rate declines (to 9 percent until 2019).
- The statutory pension age is increased (throughout the projection period) by an automatic link to ongoing increases in life expectancy which leads to a uniform age threshold for males and females at age 70 around 2060.
- Total contribution rates and second-pillar allocations are increased by 1 percentage point per year against current values (20 percent and 5 percent of taxable wages, respectively) starting from 2016; at least temporarily, the weight of nominal wage growth in the rule for benefit up-ratings (currently: 50 percent) is also increased; however, both these changes come in two possible variants:
  (i) in the '8/80 scenario', second-pillar allocations reach 8 percent of taxable wages (in 2018), then remain constant; the weight of wage growth in benefit up-ratings goes up to 80 percent (until 2018), but back to 50 percent later on (from 2039 to 2041); and
  (ii) in the '10/100 scenario', second-pillar allocations go up to 10 percent (until 2020), while the weight of wage growth becomes 100 percent (in 2020) and then goes down to 50 percent again (from 2042 to 2047).

Note that total contributions rates and second-pillar allocations always move in parallel, so that the effective contribution rate for the first-pillar scheme remains constant.

The impact of these reforms on public pension expenditure and on the state subsidy is included in Figure 1. Compared to the baseline scenario, both strategies lead to reductions in expenditure and in the subsidies needed to balance the scheme in the short to medium run. In the 8/80 scenario, public pension expenditure and state subsidies remain below those in the baseline scenario throughout. The difference becomes larger after 2040, due to the return to the old rule for benefit up-ratings, and the state subsidy falls to zero around 2055. In the 10/100 scenario, expenditure and subsidies exceed those in the baseline scenario between 2035 and 2050, when they may have become acceptably low in all the cases considered here. The reason is that benefit up-ratings are more generous in this period, amounting to pure wage indexation. As this rule is phased out in the 2040s, expenditure falls below corresponding baseline figures, and the state subsidy becomes zero shortly before the end of the projection horizon.

Figure 2 also displays the impact of these reforms on the (gross) level of average pension benefits – those provided by the public scheme as well as total benefits

deriving from both pillars. Our two scenarios have been deliberately designed to demonstrate the options arising in this respect. The 8/80 scenario stabilizes total pension benefits almost perfectly at their current level. The 10/100 scenario even leads to a long-term recovery of the benefit level, in case this is considered desirable.

Policy proposals

The agenda developed here for possible reforms to improve the Croatian system of old-age provision consists of two types of measures: some which are suited to reduce the high level of pension expenditure in the near future and others which will avert the erosion of retirement income in the long run. Important measures of the first type are changes in eligibility rules for disability and early retirement, plus gradual increases in the retirement age which can be automatically linked to increases in life expectancy. Reforms of this kind need to be taken soon. Considering the budgetary situation of the current system and the strength of the ageing process, there are not many alternatives. Measures of the second type are further expansions of pre-funded pensions, probably complemented with more generous benefit up-ratings of unfunded pensions. These elements can be combined in various ways and with a timing that can be flexibly adjusted. The expansion of second-pillar contributions should not be postponed, as this is an element of reform which needs time to fully unfold its effects and can be really favourable.[4]

References

European Commission and EU Economic Policy Committee (2014), *2015 Ageing Report: Underlying Assumptions and Projection Methodologies,* European Economy 8/2014.

MISSOC (2015), *Mutual Information System on Social Protection,* http://www.missoc.org.

Nestić, D. and I. Rašić Bakarić (2008), "From Work to Retirement: Pension System Incentives to Continued Labour Market Participation in Croatia", in: Vehovec, M. (ed.), *New Perspectives on a Longer Working Life in Croatia and Slovenia,* Zagreb: Ekonomski Institut and FES, 81–99.

OECD (2015), *Pensions at a Glance 2015,* Paris: OECD.

Šonje, V. (2011), *Pension Systems and Pension Reforms: Case of Croatia,* Arlington: USAID PFS Project.

Werding, M. and M. Primorac (2016), *Old-age Provision: Policy Options for Croatia,* CESifo Working Paper 5761.

[4] For further details of these recommendations and a few caveats, see Werding and Primorac (2016).

Appendix: Assumptions for the long-term projections

Projections for the 'baseline' scenario are based on cohort-wise, year-by-year projections using the following assumptions (for many further details, see Werding and Primorac 2016):

- The total fertility rate remains constant at 1.5 (children per woman) throughout the projection period; life expectancy at birth goes up to 87.6 years for females and to 82.7 years for males until 2060 (year-2013 figures are 80.7 and 74.0 years, respectively); net immigration is zero throughout the projection period.
- Participation rates by age and gender are projected into the future relying on cohort effects that are present in actual data.
- Entries into disability and early retirement are adjusted accordingly; age-specific disability risks are shifted to higher ages with each additional year of life on a one-for-one basis.
- Behavioural reactions to increases in the statutory retirement age imply that a one-year increase in the age threshold leads to one-year delays in actual retirement.
- Unemployment decreases to current estimates for the NAWRU (14.4 percent according to the European Commission's AMECO database) until 2019, thereby removing business-cycle dynamics from the long-term projections.
- Growth rates of labour productivity (and wages) are borrowed from projections for the '2015 Ageing Report' prepared by European Commission and EU Economic Policy Committee (2014), the average real growth rate being 1.8 percent p.a.
- Employment projections and productivity assumptions are combined to obtain simple projections for GDP as a macroeconomic background scenario.
- The real interest rate for government bonds is assumed to be 3 percent p.a.; the inflation rate is set to 2 percent p.a.
- The current legal framework for assessing and up-rating public pensions is modelled as it is. Accumulation and decumulation of second-pillar funds is re-constructed assuming that annuitization is actuarially fair.

Human Capital in Croatia

Nadine Fabritz* and Oliver Falck**

Introduction

Despite ongoing reforms to the education system, the state of human capital in Croatia lags behind both the EU average and its peer countries, as indicated by measures such as PISA test scores or the share of the population with tertiary education. At the same time, the Croatian labor market faces severe challenges posed by high levels of youth unemployment and a skills mismatch between market demand and educational supply. The established literature (e.g. Aghion and Howitt 2010) proposes an approach to designing optimal education policy that depends on the current state of an economy's development. Investment in higher education increases a country's ability to make groundbreaking innovations, while investing in primary and secondary education helps in fostering imitation, i.e. implementing existing technologies. Focusing on higher education, however, exerts a stronger impact on economic growth in countries that are close to the technology frontier. Within the European Union, Croatia ranks among the countries with lower capacity for innovation (see European Commission 2014), still somewhat below the technology frontier.

An extensive discussion of every key aspect for reform would exceed the scope of this study. This policy paper therefore focuses on the most critical challenges that Croatia is currently facing in order to find viable solutions that may be implemented in a timely manner. The first reform we propose aims at reducing youth unemployment and, at the same time, better meet the demands of the Croatian labor market, by strengthening the dual vocational education system. The second reform proposal aims at promoting training and lifelong learning activities by integrating the existing active labor market policies measures into a voucher system targeted at the low-skilled.

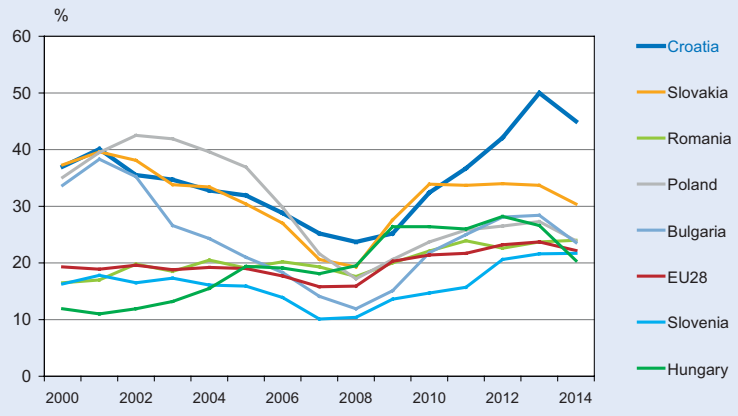
Main challenges relating to human capital

Youth unemployment

Croatia has faced exceedingly high levels of youth unemployment, especially after 2008. In 2014, the annual average unemployment rate for the below-25 age group was 45 percent, the third-highest in the EU after Greece and Spain, and about twice the EU average (22.2 percent), as shown in Figure 1. The Croatian government introduced several measures to fight this development. These include, among others, self-employment subsidies, direct employment subsidies, training and specialization subsidies, social contribution exemptions and tax reliefs. Other measures are public works and continued education after vocational programs (Ministry of Labour and Pension System 2014; Pavičić 2013).

Figure 1

Unemployment rates in Croatia and selected countries
15–24 age bracket



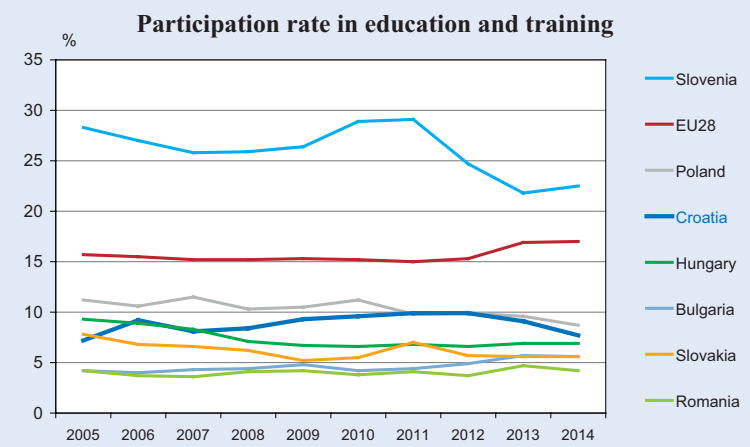
Source: Eurostat (2015a).

* NERA Economic Consulting, Berlin.
** Ifo Institute.

Skills mismatch

A recurring issue in Croatia is a mismatch between educational qualifications obtained and the skills needed on the labor market. This is indicated by the fact that less than 50 percent of vocationally educated graduates find a job in their respective field of study (European Commission 2014). Survey evidence from recent years shows a lack of adequately qualified personnel as an obstacle for Croatian firms' innovation performance. At the level of tertiary education, science, engineering and mathematics are underprovided, whereas the social sciences and humanities are oversupplied. The OECD concludes that there is an under-provision of graduates from both professional tertiary and secondary-level vocational studies (OECD 2014).

Figure 2



Respondents of ages 25 to 34 were asked whether they had participated in education or training measures within the last four weeks. Data from EU Labor Force Survey.

Source: Eurostat (2015b).

While a major part of the problem certainly lies with the education-supply side, the labor-demand side also shows significant shortcomings. Companies are incapable of formulating forecasts about how their skill requirements will evolve over time (OECD 2012). Also, a survey among Croatian employers (Pavičić 2013) reveals that 65 percent of employers feel that the education system does not provide occupation-related practical skills. At the same time, only about half of the enterprises give young people the opportunity to acquire these skills by offering apprenticeships, internships or work practice.

Life-long learning

Croatian companies and employees lag behind the European Union average in terms of life-long learning activities (OECD 2014), further adding to the skills mismatch. The participation rate in education and training among the population aged 25 to 34 is low in comparison to the EU average, as Figure 2 shows. Among the 25 to 34 year-olds, in 2014 a mere 7.7 percent had received some kind of training during the last four weeks, with the trend pointing downwards, against an average of 17 percent in the EU. Underdeveloped training activities of firms are also evidenced by a relatively low share of companies that offer continuing vocational training (CVT, i.e. education and training occurring during paid working time, or partially paid by employers if training activities are organized outside of paid working time). In 2010, 50 percent of Croatian firms engaged in CVT, compared to an EU-wide average of 56 percent. The figure is even lower in most peer countries (Eurostat 2014). The Croatian government actively tries to foster training activities through tax rebates, but the uptake is low because companies are not sufficiently aware of their existence and due to high administrative barriers (European Commission 2014).

Several instruments are currently available to promote training activities in Croatia. These include direct subsidies for on-the-job training and subsidies and training for self-employment. These measures are targeted specifically at young people. Training of the unemployed is conducted by training institutions through public procurement procedures. This measure aims particularly at high-school drop-outs, prime-working-age women with inadequate education levels, and persons in unfavorable positions in the labor market (Croatian Employment Service 2014). In addition, the upgrading of worker skills is supported if these workers are to otherwise become redundant due to the introduction of new technologies. Companies undergoing economic hardship may also apply for financial support for training.

Reform suggestions

Reforming vocational education in Croatia

Vocational curricula in Croatia extend over one to three years and contain varying degrees of practical

on-the-job training. Attended by about 21 percent of pupils in 2013, vocational schools are divided into 'industrial and trade' and 'crafts' courses (Matković 2010). Industrial and trade schools provide a school-based vocational curriculum with placements in industrial or sales firms. There is little real on-the-job training, as most is organized through in-school workshops. Crafts schools offer a real dual vocational education curriculum, predominantly in crafts businesses, where two-thirds of the time is spent on the job in apprenticeships, and one-third is spent in school (Matković 2010). Under the dual vocational education, pupils apply directly to companies, which must be licensed by the chambers. The education is school-based (about one-third) and work-based (about two-thirds). When it was introduced in Croatia, the take up of this dual education system was low. According to an EU survey conducted in 2011, Croatia today displays the second-lowest proportion (after Italy) of young people who consider vocational education as an attractive option (European Commission 2011).

The dual vocational training or apprenticeship system has historically been the dominant form of vocational education in countries such as Germany, Denmark, Austria and Switzerland. In Germany, currently around half of each cohort chooses an apprenticeship. Whereas in Croatia this model is restricted in practice to crafts trades (Crnković-Pozaić 2009), in Germany approximately 350 professions are offered under the dual education system in the fields of crafts trades, industry and trade, agriculture, tourism, the public sector, and certain freelance professions (such as pharmacists, doctors, lawyers or tax consultants). This apprenticeship system is seen as a source of labor market stability (German Federal Ministry of Education and Research 2013). The low levels of youth unemployment in Germany (7.7 percent in 2014) are partly attributable to this form of education, since it integrates work-based and school-based learning and thus facilitates the apprentice's transition to full-time employment (Hoeckel and Schwartz 2010). While the literature has found that this system reduces youth unemployment (Hanushek, Woessmann and Zhang 2011), it may increase it at an older age, possibly because the specific skills obtained by a vocational education may become obsolete.

Considering Croatia's status as a moderate innovator, we suggest strengthening the dual vocational system in upper secondary education by widening the scope of the apprenticeship programs beyond crafts, moving towards the German dual vocational education model. This may lead to a win-win situation for employees and firms: youth unemployment can be reduced, as the school-to-work transition is facilitated, and firms can directly access a pool of workers that they themselves have qualified according to their needs, reducing the skills mismatch between skills needed on the labor market and those provided by the education system.

To realize the advantages that the dual vocational education system offers, the government should bolster financial incentives for young people linked specifically to the apprenticeship system. In addition, the provision of inter-company workshops (as in Germany) may help in overcoming firms' liquidity constraints. Next, policymakers should make use of the various funding opportunities provided by the European Union for apprenticeship systems. More flexible labor-market regulations will make young employees more competitive compared to the older portion of the workforce, and foster the adoption of the apprenticeship system. Finally, public information campaigns on the advantages of these types of careers can help to improve the image of apprenticeships. Informing firms about the advantages that the system offers them, such as that the investment in apprenticeship today leads to higher future payoffs from workers with specific skills, may also mobilize the private sector in adopting the system.

Reforming life-long learning activities

The next proposal for reform concerns people who have already entered the workforce. A constant upgrading of skills of the actively employed is important to keep current with labor market requirements and to adapt to new technologies. Life-long learning activities in Croatia, as mentioned previously, are rather marginal. Improving them is one of the key priorities in the government's current education strategy. Subsidizing training for people in employment and vocational training for the unemployed is a substantial part of promoting investment and job creation, not only in Croatia, but in many other countries. These measures aim to upgrade the skills of the unemployed to better meet labor market requirements, increasing thus their employability. Useful state interventions in order to foster job-related training are direct subsidies or income tax deductibility, as already introduced in Croatia (see above).

Training voucher systems have proved effective in several countries, according to the literature (see e.g. Doerr *et al.* 2014; Schwerdt *et al.* 2012), in upgrading the skills of individuals with low levels of qualifications. The main difference to traditional training measures is that participants can, to a certain degree, choose the training courses rather than for them to be assigned by an agency worker. In addition, participants have free choice of training providers among a list of those certified under the scheme, promoting competition among providers in the process. Lastly, individuals have the freedom not to redeem the voucher. The idea behind this is that a wider set of possibilities for participants should lead to better choices and to increased program effectiveness. In addition, the absence of an obligation to redeem the voucher fuels a positive attitude, since the training course feels more like an offer than an assignment (Doerr *et al.* 2014).

We propose the introduction of a training voucher system in Croatia that is targeted specifically at persons with low or no formal qualifications, since, according to the literature, these are the most likely to profit from increased employability. Young people, considering their high unemployment rates, should also be primary targets. Overall, well-targeted vouchers including also those in employment and within firms, will increase life-long learning and help to reduce the existing skills mismatches.

Conclusion

The performance of the Croatian education system certainly has room for improvement, as evidenced by the comparison of key indicators in an international context. The most pressing issues relating to human capital currently are a high rate of youth unemployment and a mismatch of skills provided by the education system and those demanded on the labor market. In order to solve these issues, vocational education should be reformed to better meet the needs of the labor market by broadening the existing apprenticeship system along the lines of those in Germany or Austria.

In order to promote life-long learning among the population, which will also help to reduce the skills mismatch, we propose introducing a system of training vouchers, since they have proved effective in upgrading the skills and improving the employability of low-skilled persons. These vouchers should be made available to people with low or no formal qualifications, irrespective of their labor market status.

References

Aghion, P. and P. Howitt (2010), "Joseph Schumpeter Lecture Appropriate Growth Policy: A Unifying Framework", *Journal of the European Economic Association* 4, 269–314.

Baljkas, S., M. Androsevic and R. Wessel (2010), *Das Kroatische Bildungssystem: Aufbau, Probleme und Reformen,* Länderbericht, Konrad Adenauer Stiftung.

Crnković-Pozaić, S. (2009), *Transition from School to Work: Internships and First Entry to the Labour Market in Croatia,* Working Paper, European Training Foundation. Turin.

Croatian Bureau of Statistics (2014), *Upper Secondary Schools and Students' Boarding Homes, End of 2012/2013 and Beginning of 2013/2014 School Year,* Statistical Reports, Zagreb.

Croatian Bureau of Statistics (2014), *Higher Education 2013,* Statistical Reports, Zagreb.

Doerr, A., B. Fitzenberger, T. Kruppe, M. Paul and A. Strittmacher (2014), *Employment and Earnings Effects of Awarding Training Vouchers in Germany,* IAB Discussion Paper 23/2014.

European Commission (2011), *Youth on the Move: Analytical Report,* Flash Eurobarometer Series 319b.

European Commission (2014), *Education and Training Monitor 2014: Croatia; Volume II,* Brussels.

Eurostat (2014), *Training Enterprises As % of All Enterprises, by Type of Training and Size Class* [trng_cvts02].

Eurostat (2015a), *Unemployment Rate by Sex and Age Groups – Annual Average, %* [une_rt_a].

Eurostat (2015b), *Participation Rate in Education and Training (Last 4 Weeks) by Sex and Age* [trng_lfse_01].

Federal Ministry of Education and Research (2013), *Unterrichtung durch die Bundesregierung: Strategiepapier der Bundesregierung zur Internationalen Berufsbildungszusammenarbeit aus einer Hand,* Drucksache 17/14352, 5 July.

Hanushek, E., L. Woessmann and L. Zhang (2011), *General Education, Vocational Education, and Labor-Market Outcomes over the Life-Cycle,* IZA Discussion Paper 6083.

Hoeckel, K. and R. Schwarz (2010), *Learning for Jobs: OECD Reviews of Vocational Education and Training,* Paris:OECD.

Matković, T. (2009), *Mladi izmedu obrazovanja i zapošljavanja: Isplati il se školovati?* (Youth between Education and Employment: It Is Worthwhile Going to University?), UNDP and Croatian Ministry of Health and Social Welfare.

Ministry of Labour and Pension System (2014), *Youth Guarantee Implementation Plan,* http://www.mrms.hr/wp-content/uploads/2014/04/implementation-plan-yg.pdf.

OECD (2012), *Western Balkan Regional Competitiveness Initiative (RCI): Third Working Group on Human Capital Development – Summary,* Paris.

OECD (2014), *OECD Reviews of Innovation Policy: Croatia 2013,* Paris.

Pavičić, I.R. (2013), *Active Labour Market Policy Aimed at Youth,* Presentation of the Active Labour Market Policy Division, Croatian Employment Service, Zagreb.

Schwerdt, G:, D. Messer, L. Woessmann and S.C. Wolter (2012), "The Impact of an Adult Education Voucher Program: Evidence from a Randomized Field Experiment", *Journal of Public Economics* 96, 569–583.

Fiscal Consolidation

Marina Riem*

Public budget

Revenues

Revenues as a share of GDP are high in Croatia, at around 40 percent. Due to low economic activity since the financial crisis hit in 2008, revenues stagnated moderately at an annual level. A mild recovery is forecasted for 2015 and 2016 (EC 2015). Compared to Eastern European peer countries, only Hungary and Slovenia have higher revenue shares than Croatia. The largest share of revenues, with almost 60 percent in 2013, comes from taxes, while the second-largest, with 30 percent in the same year, are social security contributions.

(1) Taxation

The Croatian tax system is very much compatible with those of EU member countries. Concerning the tax burden on labor, the average tax wedge in Croatia is similar to that of the surrounding countries. Workers without children earning an average gross wage in production of HRK 7,260 and with a surtax rate of 10 percent have a tax wedge of 41.2 percent in Croatia, which is lower than in Hungary, the Czech Republic and Italy, but higher than in Slovakia and Poland (Urban 2009). Marginal tax rates, however, are high at almost all levels of income, reaching almost 60 percent at twice the average wage (Urban 2009). Further tax burden emerges from corporate taxes and indirect taxes. Indirect taxes are paid through the VAT rate, which, at 25 percent, ranks at the very top in Europe (Kesner-Skreb 2013; KPMG 2014). The corporate tax rate in Croatia is 20 percent. When looking at the tax system from a business perspective, considering all taxes and contributions paid by a standard company, the total tax rate[1] on corporations in Croatia is among the lowest in an international comparison (PwC 2014). Even though Croatia does not extract too much taxation from firms operating in its jurisdiction, the percentage of firms that identify the tax burden as one of the main obstacles of doing business in Croatia is higher than the regional average (World Bank 2014). On average, corporations in Croatia incur 19 different tax payments and it takes them 196 hours to comply with them (PwC 2014).

(2) Tax avoidance and the shadow economy

In 2014 the shadow economy amounted to 28 percent of the official GDP in Croatia (Schneider 2015). Out of 31 European countries, only Bulgaria and Romania have a larger shadow economy (see Figure 1). Key causes of the shadow economy are a high tax burden, low quality of state institutions and benefits, high prevalence of cash payments, and low risk of detection (A.T. Kearney and Schneider 2013). The high taxes on labor, especially at low earnings, are among key causes of the shadow economy in Central and Eastern Europe (World Bank 2012). The rate of tax avoidance in Croatia is high, estimated at between 5.5 and 7.5 percent of GDP in 2000 (Madzarevic-Sujster 2002). A consequence of tax evasion is the erosion of the tax base.

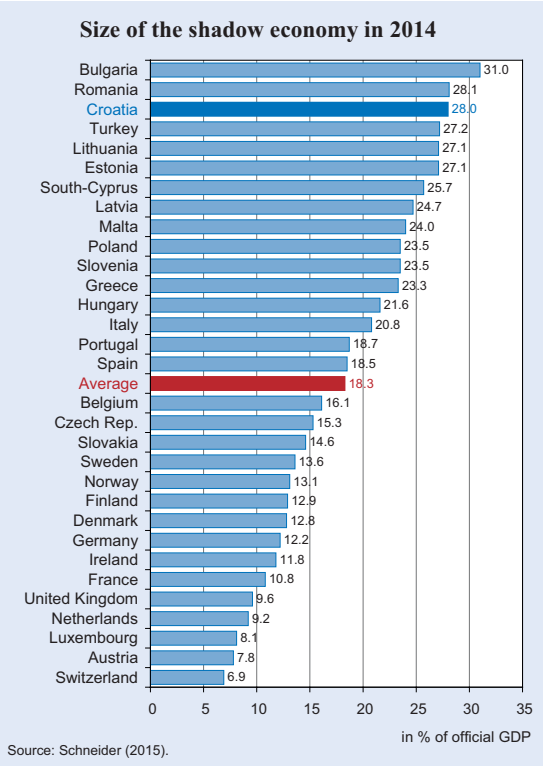
Expenditures

To this day, Croatia has one of the largest public sectors in the region. In comparison to peer countries, only Hungary and Slovenia had a higher expenditure-to-GDP ratio than Croatia in 2013. Projections to 2016 indicate that Croatia will have the highest expenditure share out of all peer countries. The largest share of expenditure, with 43 percent in 2013, corresponds to social benefits, while the second-largest, with 25 percent in the same year, is for the compensation of employees.

* Ifo Institute.

[1] The total tax rate measures the amount of taxes and mandatory contributions borne by the standard company (as a percentage of commercial profit, i.e. the profit before all taxes, which differs from the conventional profit before tax reported in financial statements) – see PwC (2014).

Figure 1



These expenditures are also the primary source of the emerging fiscal deficits. Furthermore, these sectors are affected by major efficiency issues.[2]

(1) Social security

Pension payments made up 62.7 percent of social expenditures in 2012. As revenues from contributions barely cover 60 percent of the current expenditure on pensions (World Bank 2011), the pension system has become a major source of fiscal stress. Health spending has grown as well due to increasing costs, decreasing number of health insurance contributors, and high contribution exemptions. The level of co-payments in the health sector is comparably low (World Bank 2002).

(2) Public sector employment

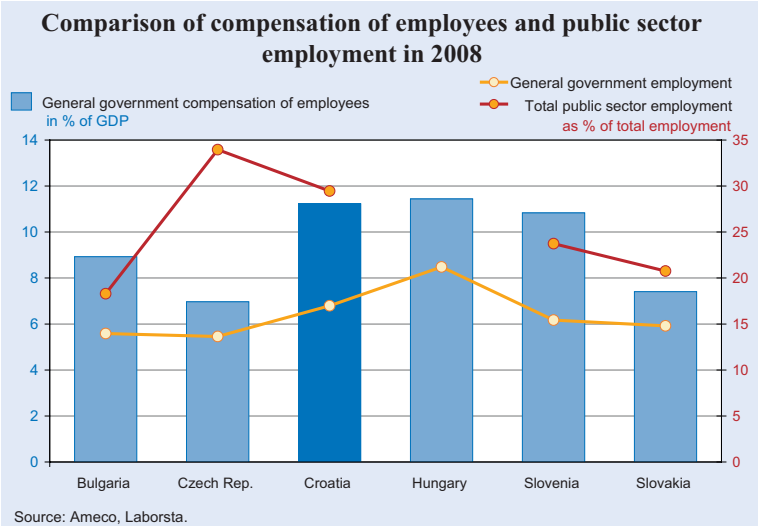
General government expenditure for the compensation of employees rose from 11.2 percent of GDP in 2008 to 12.01 percent of GDP in 2013, a high level compared to peer countries: in 2008 only Hungary had higher spending than Croatia (see Figure 2), while in 2013 Slovenia's and Croatia's expenditures were the highest out of the peer group. Public sector employment in Croatia consists of general government employees and employees in state-owned enterprises. Employment in the general government sector was around 278,000 in 2008, amounting to 17 percent of all people in work (Laborsta 2015).[3] Croatia's general government employment is in line with the European average (Bejaković *et al.* 2010). Among its peer countries (Bulgaria, Czech Republic, Hungary, Slovenia and Slovakia), the level ranged from 13 to 17 percent of total employment in 2008 in all countries except Hungary, where it reached 21.2 percent (Laborsta 2015). Where Croatia does stand out is in the high employment in state-owned enterprises, which, at around 12.5 percent of total employment, is twice the EU average (Bejaković *et al.* 2010). Hence, when looking at Croatia's total public sector employment, including general government employment and employment in state-owned companies, Croatia and the Czech Republic had the highest share of public sector employment among the peer countries (see Figure 2).

The reason for high expenditure on the compensation of employees is not mainly the unusually large level of employment in the public sector, but the high salaries in this sector in comparison to the manufacturing sector and to other economies (World Bank 2002), as

[2] Also the amount of subsidies is high in Croatia compared to all other EU members. But there is little evidence that subsidies helped improve the performance of the recipients, especially in agriculture and railroads. Large state-owned companies, such as Croatian Railways, tend to be uneconomic and thus not competitive in the EU.

[3] Comparable data on general government, state-owned companies and total public sector employment are only available until 2008 at Laborsta.

Figure 2



well as overstaffing in non-civilian areas (Vidačak 2004). Public sector wages in Croatia are based on job complexity coefficients, introduced by the 2001 Law on Wages in Public Services. The base wage is subject to collective bargaining, which is commonly preceded by union pressure and strikes. Trade union density in the public sector is about 60 percent, with a high concentration of membership in strong national unions (Franičević and Matković 2013). Coefficients and supplements have also been a subject of public pressure and informal lobbying, leading to frequent changes. This results in a complex and nontransparent setting of wages and coefficients. In Croatia people employed in the public sector seem to earn more than they would earn in the private sector with the same personal characteristics and qualifications. Hence, there seems to be a public sector wage premium. The public sector pay gap in Croatia seems to be in line with most EU countries. Serbia, for instance, had a higher premium, of 17.9 percent, in 2011 (Nikolic *et al.* 2014). But studies find large differences of the wage premium along the pay distribution. Higher premiums prevail at the lower half of the pay distribution, but top-paid workers earn higher wages in the private sector than in the public sector.

(3) Public administration

According to the Global Competitiveness Report 2014/15, among the most problematic factors in Croatia are the inefficient government bureaucracy and corruption (Schwab 2014). When looking at the overall government effectiveness indicator, which measures the quality of public and civil service and its independence from political pressures, Croatia was at a low level compared to its peer countries in 1996 (only Bulgaria did worse), but has caught up over time, reaching the midfield ahead of Bulgaria and Hungary by 2013. Due to the inefficient public administration, firms in Croatia bear high administrative burdens in terms of time and costs. Croatia does worst in the Doing Business 2015 report (World Bank 2015) in the fields starting a business, dealing with construction permits, registering property and trading across borders (see article in this issue). Public administration in Croatia is characterized by poor coordination and duplicated structures among the different units. A tendency of over-politicization of the administrative system exists (Koprić 2011). According to public perception, corruption is widespread.

Policy recommendations

Fiscal consolidation can be achieved through a mixture of revenue measures and expenditure cuts. Countries in need of fiscal consolidation should set deficit or debt targets, announce a consolidation plan, and ensure credibility by detailing consolidation measures and how targets will be met. Expenditure-based measures often take longer to be fully implemented, while increasing tax revenues can provide immediate gains. These, however, are offset by the equity-efficiency trade-off and the existence of the shadow economy. Fiscal consolidation can also include limiting the size of government in general. The privatization process of state-owned companies can effectively contribute to limiting the scope of government. Overall budget consolidation in Croatia should aim towards long-term sustainability via structural reforms rather than short-term fiscal adjustments.

Revenue measures

Revenue measures should initially concentrate on broadening the tax base in order to limit tax-induced distortions that are detrimental to growth. The general tax level in Croatia is in line with the European average. The government of Croatia should ensure continuity of the tax system to increase confidence in legislation and government. However, this does not mean that the tax system should stay as it is in all details.

A government must choose the right structural incentives for people to join and stay in the official market. As discussed in the sub-section on labor market reforms, both the tax and public benefit systems should aim at increasing labor market participation and activating the unemployed. Distortions introduced by taxes should also be eliminated by reducing both the number of taxes as well as the number of tax exemptions. The number of tax procedures and their simplification by further promoting e-filing of tax returns and electronic communication with tax authorities must be undertaken in order to lower tax compliance costs. This would have the added benefit of removing opportunities for corruption.

Broadening the tax base can also be achieved through zero tolerance of tax avoidance and of the shadow economy. The likelihood of detecting tax evasion must be increased significantly. To ensure this, the

number of tax administration personnel tasked with performing audits should be increased, and their training and case selection methodology improved. In addition, there should be more consistent imposition of statutory penalties for tax evasion, particularly by courts. When it comes to the shadow economy, better co-operation between the tax administration and other government bodies is essential. A recommendation related to the financial sector is to incentivize cashless payments. Furthermore, the education and public information system must be enlisted to increase public awareness of the adverse effects of the shadow economy and so improve tax morality. An improvement in the quality of public goods and services provided by the state would also contribute to achieving this goal.

There is also scope to broaden the tax base by eliminating any tax expenditures that are distorting, poorly targeted, and contribute to a lack of transparency. The most costly tax expenditures are typically those aimed at boosting retirement savings, promoting homeownership, health insurance and charitable donations (OECD 2010). Publicly available tax expenditure reports that help identify potential areas for broadening the tax base and enhance transparency should be produced.

Expenditure cuts

Besides fiscal consolidation measures such as structural reforms in the health and social benefit systems and old-age pensions, a consolidation strategy should include measures that aim at reducing a government' running costs. These measures include wage or staff reductions, government reorganization, and across-the-board efficiency enhancements in the administration.

The government should implement a law on public administration salaries that provides an easy system of wage determination. The budget could be relieved by reducing the wage premium prevalent in the public sector and state-owned enterprises, which in turn could lead to a reduction of wages in the same segment in the private sector, opening up new employment opportunities for a portion of the labor market that is characterized by extremely high unemployment. Wage-setting in the public administration may well serve as a role model for wage-setting in the private sector, boosting the competitiveness of the Croatian economy due to lower wage costs.

To facilitate an efficient and speedy handling of government services, Croatia must concentrate on developing digital procedures and bringing all levels of public agencies to an e-government operational status. Besides increasing efficiency, this would reduce red tape and remove opportunities for corruption. Efficiency of the public administration should be further increased through the elimination of duplicated structures as well as the number of public employees, which currently places a heavy burden on the public budget.

References

A.T. Kearney and F. Schneider (2013), *The Shadow Economy in Europe, 2013,* https://www.atkearney.com/documents/10192/1743816/The+Shadow+Economy+in+Europe+2013.pdf/42062924-fac2-4c2c-ad8b-0c02e117e428.

Bejaković, P., V. Bratić and G. Vukšić (2010), *Employment in the Public Sector: International Comparisons*, Institute of Public Finance Newsletter 51, Zagreb.

European Commission (EC 2015), *European Economic Forecast, Winter 2015*, Brussels.

Franičević, V. and T. Matković, (2013), "Croatia: Public Sector Adaptation and Its Impact on Working Conditions", in: Vaughan-Whitehead, D. (ed.), *Public Sector Shock: The Impact of Politic Retrenchment in Europe,* Cheltenham and Geneva: Edward Elgar and International Labour Office, 134–173.

Kesner-Skreb, M. (2013), *Croatia among the Leaders in the Level of VAT Rates,* Institute of Public Finance Press Releases 57, Zagreb.

Koprić, I. (2011), "Contemporary Croatian Public Administration on the Reform Waves", *Croatian Academy of Legal Sciences Yearbook* 2(1), 1–40.

KPMG (2014), *Corporate and Indirect Tax Rate Survey,* https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/corporate-indirect-tax-rate-survey-2014.pdf.

Laborsta (2015), *Public Sector Employment,* http://laborsta.ilo.org.

Madzarevic-Sujster, S. (2002), *An Estimate of Tax Evasion in Croatia,* Institute for Public Finance Occasional Paper 13, Zagreb.

Nikolic, J., I. Rubil and I. Tomic (2014), *Changes in Public and Private Sector Pay Structures in Two Emerging Market Economies during the Crisis,* Institute of Economics Working Paper 1403, Zagreb.

OECD (2010), *Choosing a Broad Base – Low Rate Approach to Taxation,* Tax Policy Study 19, Paris.

PwC (2014), *Paying Taxes 2014: The Global Picture,* https://www.pwc.com/gx/en/paying-taxes/assets/pwc-paying-taxes-2014.pdf.

Schneider, F. (2015), *Size and Development of the Shadow Economy of 31 European and 5 other OECD Countries from 2003 to 2015: Different Developments,* http://www.econ.jku.at/members/Schneider/files/publications/2015/ShadEcEurope31.pdf.

Schwab, K. (2014), *The Global Competitiveness Report 2014–2015,* Geneva: World Economic Forum.

Urban, I. (2009), *The Tax Burden on Labour in Croatia,* Institute of Public Finance Newsletter 47, Zagreb.

Vidačak, I. (2004), "Croatia: In Search of a Public Administration Reform Strategy", in: Friedrich Ebert Stiftung (ed.), Reforming Local Public Administration: Efforts and Perspectives in South-East European Countries, Zagreb: Friedrich Ebert Stiftung, 81–88.

World Bank (2002), *Regaining Fiscal Sustainability and Enhancing Effectiveness in Croatia: A Public Expenditure and Institutional Review,* Washington DC.

World Bank (2011), *Croatia – Policy Options for Further Pension System Reform,* Washington DC.

World Bank (2012), *In From the Shadow: Integrating Europe's Informal Labor,* World Bank Policy Research Working Paper 5923.

World Bank (2014), *Enterprise Surveys: Croatia 2013,* Washington DC.

World Bank (2015), *Doing Business 2015: Croatia,* Washington DC.

Public Debt Policies

Markus Reischmann*

Government liabilities

Debt developments

Public debt is an important indicator for assessing the sustainability of a country's fiscal policy: high and rising debt levels (usually expressed as a share of GDP) jeopardize fiscal sustainability. Fiscal risks can result from the currency denomination of public debt, the creditor structure, the maturity structure, and interest rate developments. Liabilities not recorded in the budgetary system ('hidden debt') also impair fiscal sustainability. Comprehensively assessing a country's fiscal sustainability requires considering obligations the government has assumed both inside as well as outside the budgetary system, such as government guarantees on borrowing by public and private entities and liabilities of state-owned enterprises.

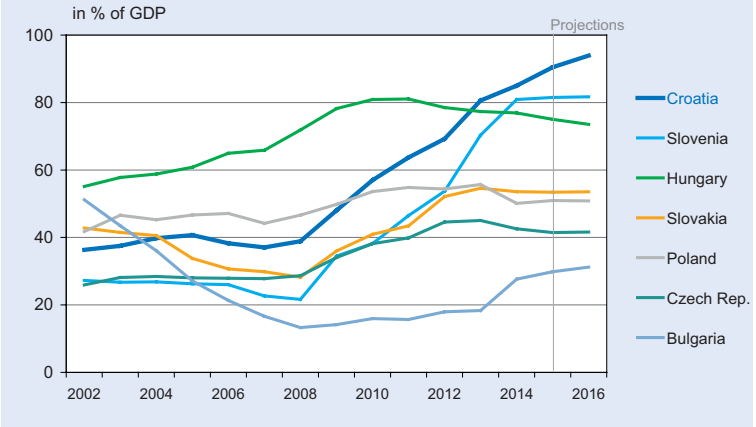
In 2014, Croatia's general government debt-to-GDP ratio was 85.0 percent[1] Croatia's debt-to-GDP ratio was still below the EU28 average (86.8 percent), but compared to central and eastern European peer group countries Croatia exhibits the highest debt-to-GDP ratio (see Figure 1). The Croatian debt-to-GDP ratio is expected to rise further to 93.9 percent in 2016 (European Commission 2015).

The central government holds 98.1 percent of general government debt. Central government debt under the Eurostat definition includes guarantees to the state-owned road transport companies[2] (about 9.8 percent of GDP) and the Croatian Bank for Reconstruction and Development (about 4.5 percent of GDP). Excluding guarantees, general government debt amounts to about 70.7 percent of GDP (CNB 2014). Additionally, the government has issued guarantees of about 2.4 percent of GDP to units classified outside the general government that are not included in the Eurostat definition (see Figure 2).

After a moderate decline between 2002 and 2007, general government debt started to increase strongly after the outbreak of the financial crisis in 2008 and during the following years of recession. The unfavorable developments of the government budget, combined with decreasing nominal GDP, raised the government debt-to-GDP ratio by about 46 percentage points between 2008 and 2014. Between 2008 and 2011, the primary deficit (net lending excluding interest payments) as a share of GDP increased from 1.0 percent to 4.5 percent. After a decline between 2011 and 2013, the primary deficit increased to 2.2 percent of GDP in 2014; it is projected to reach 1.9 percent and 2.0 percent in 2015 and 2016, respectively. Interest payments as a share of GDP increased from 1.6 percent in 2002 to 3.5 percent in 2014 and will increase further in the next years.

Figure 1

Public debt in Central and Eastern European countries, 2002–2016



Sources: Ameco; Eurostat.

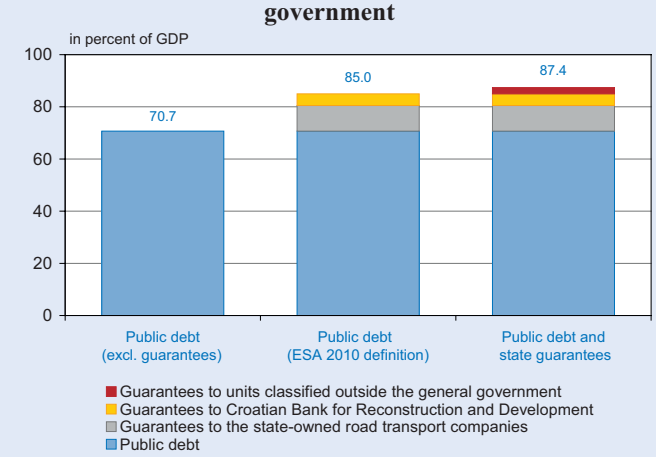
* Ifo Institute.

[1] The debt level in absolute terms amounted to about 36.5 billion euros.

[2] Croatian Motorways, Croatian Roads, and Rijeka-Zagreb Motorway.

Figure 2

Contingent and non-contingent liabilities of the Croatian general government



Sources: Ameco; Eurostat; own calulations.

In April 2015, Croatia faced the second-highest interest rate among its peer countries, after Hungary, on long-term government bonds denominated in national currency. Credit default swaps (CDS), which insure investors against the default of the bond-issuing sovereign, are higher in Croatia than in all peer group countries. CDS spreads are an indicator of the market's current perception of the sovereign's risk of default. At the beginning of 2015, Standard & Poor's cut Croatia's credit rating from BBB to BB, two levels below investment grade, because the government did not manage to reduce the budget deficit and the economy remains in recession (Bloomberg 2015).

Debt structure

The currency structure of Croatian public debt poses risks to fiscal sustainability because the government has largely issued bonds denominated in foreign currencies. In 2013, only 23.3 percent of government debt was denominated in kunas, while 72.2 percent was denominated in euros, 4.3 percent in US dollars and 0.1 percent in Swiss francs. At about 58.1 percent of GDP, debt denominated in foreign currency is very large and makes Croatia vulnerable to external shocks and exchange rate risks.

The composition of creditors of the general government has changed over time, depending more strongly on domestic borrowing in 2013 than a decade ago. The share of external debt has decreased by about 21.3 percentage points between 2001 and 2013, and amounted to about 39.0 percent of total debt in 2013. Public debt has thus become less vulnerable to sudden capital outflows, but is still exposed to external shocks. The share of external debt is lower than the share of debt denominated in foreign currencies, indicating that also domestic creditors lend to the government in foreign currencies.

The main domestic creditors of the general government are deposit credit institutions, which held about 34.2 percent of government bonds in 2013. 68.9 percent of the credit institutions' claims on the central government are denominated in a foreign currency. Given the owner structure of the banking sector (16 out of the 35 credit institutions in Croatia are foreign-owned banks) a large part of borrowing from credit institutions could also be considered *de facto* as external debt. The second-largest domestic creditors are pension funds, which held about 16.7 percent of government bonds in 2013. Pension funds started buying government bonds only in 2002, after the introduction of the second pillar of the pension system. Since 2002 the share of government bonds held by pension funds has steadily increased, reaching about 71.5 percent of total net assets in pension funds in 2014.

Guarantees and liabilities of state-owned enterprises

The Croatian central government issues debt guarantees to ensure favorable borrowing conditions for enterprises that are predominantly in state ownership (particularly the state-owned road transport companies), local government units, extra-budgetary funds and the Croatian Bank for Reconstruction and Development (see Bajo and Primorac 2011). Guarantees are mainly issued for development and construction projects. The tourism sector, the agriculture sector and shipbuilding projects also received government guarantees. In 2014, government guarantees amounted to about 16.7 percent of GDP. Government guarantees may become actual liabilities if corporations receiving guarantees are privatized or face financial difficulties.

In 2014, the state owned shares in about 641 companies, holding more than 50 percent of the stock in 79 of them. According to the State Office for State Property Management (2014), the state holds shares

in companies worth about 14.2 percent of GDP, including financial and insurance services, manufacturing, transportation and storage, construction, and agriculture, forestry and fishing. In 2014, the liabilities of 49 state-owned non-financial companies amounted to about 26.8 percent of GDP (State Office for State Property Management 2014; Bajo and Primorac 2014). The companies with the largest amount of total liabilities were Croatian Motorways, Croatian Roads, HEP and INA. Total liabilities of the road transport companies amounted to about 12.5 percent of GDP. Total liabilities of the state-owned financial companies amounted to about 11.3 percent of GDP.

Policy recommendations

To slow down the accumulation of public debt, Croatia must implement structural reforms to reduce the primary deficit. Additionally, privatization receipts should be used to reduce the stock of debt. Privatization should proceed in two stages: In the first stage, it should start with the sale of state-owned enterprises (SOE) in the competitive and purely commercial sectors of the economy, such as manufacturing, banking, hospitality and food services sectors. The sale of infrastructure assets, such as transport (railways, highways and roads), telecommunications, energy, and sewage, should only be considered in later stages of privatization. The sale of assets in the infrastructure sectors embodies public policy considerations such as universal access and consumer protection from abuse of monopoly pricing, and thus poses complex regulatory and competition issues. International experience shows that governments have sought to build credibility for privatization programs concentrating on competitive sectors in the first stage of privatization, and only later addressing infrastructure assets. Additionally, establishing market and regulatory frameworks is essential to the success of the transactions (OECD 2003). Certain firms with public goods characteristics, such as water and forest lands, require special regulations and protection. The list of companies of strategic interest that are not planned to be privatized should be carefully reviewed.

The state-owned enterprises that are not privatized in the first stage and the companies of strategic interest need to be restructured. The large liabilities of several SOEs constitute an obstacle to the privatization process. Restructuring should also include a professionalization of the management, i.e. (i) depoliticizing the SOE management and increasing managerial autonomy and accountability; (ii) setting clear objectives, performance evaluation and incentive structures; and (iii) instituting transparent disclosure. The SOEs should be encouraged to obtain a credit rating and seek funding from private lenders, which can reduce the government's influence and foster corporate discipline.

Debt policies and accounting and reporting standards should address implicit as well as explicit, and contingent as well as non-contingent fiscal risks. To better control contingent liabilities, government guarantees should be reduced. This requires publicly recognizing and communicating the limits of the state's responsibilities. Privatizing and restructuring (troubled) state-owned enterprises reduces contingent liabilities and future government expenditures, such as subsidies or recapitalization costs, thereby strengthening the sustainability of public finances. In the absence of more ambitious restructuring efforts in the railway and road infrastructure companies, the main recipients of state guarantees, the risk of additional public debt increases remain significant (see also European Commission 2014).

Sound fiscal institutions should be developed to evaluate, regulate, control, and prevent financial risks. A debt management strategy is crucial to reducing vulnerabilities in the public sector, and should address the following issues:

a) The share of bonds issued in foreign currencies should be reduced to lessen the risks stemming from exchange rate fluctuations, concentrating more on domestic currency financing of public debt.
b) The share of short-term debt should be kept at the current low level and even reduced in the coming years.
c) All guarantees to public and private entities and liabilities of public companies should be included in a comprehensive debt report.
d) The creditor structure should be closely monitored. The share of debt held by external creditors should be reduced to lower risks stemming from external shocks.

A debt management agency could be established to ensure optimal financing conditions for the central government. A main task of the debt management agency would be taking loans on the money and credit

markets to repay maturing debts and to ensure that all government expenditures are financed. The agency's responsibilities could also include supporting bond emissions, and portfolio optimization using derivative financial instruments. Additionally, the agency could carry out market analyses, develop models for an optimal borrowing strategy, and be responsible for liquidity management and risk monitoring.

References

Bajo, A., and M. Primorac (2011), "Government Guarantees and Public Debt in Croatia", *Financial Theory and Practice* 35, 253–276.

Bajo, A. and M. Primorac (2014), *Restructuring of Public Companies – the Key to Successful Public Sector Reforms in Croatia,* Institute of Public Finance Press Release 68, Zagreb.

Bloomberg (2015), *Croatia Cut to BB by S&P on Policy Inertia Amid Recession,* http://www.bloomberg.com/news/articles/2014-01-24/croatia-cut-to-bb-by-s-p-on-policy-inertia-as-recession-extends.

CNB (2014), *Financial Stability 13/2014,* Croatian National Bank.

European Commission (2014), *Macroeconomic Imbalances: Croatia 2014,* Occasional Papers 179.

European Commission (2015), *Country Report Croatia 2015,* Commission Staff Working Document.

OECD (2003), *Privatizing State-owned Enterprises – an Overview of Policies and Practices in OECD Countries,* http://www.apec.org.au/docs/10_tp_pfi%204/privatising%20soes.pdf.

State Office for State Property Management (2014), *Plan upravljanja imovinom u vlasništvu republike hrvatske za 2015*, Zagreb.

Doing Business in Croatia

Nadine Fabritz*, Oliver Falck** and Julio C. Saavedra***

For a country keen on attracting more foreign direct investment, Croatia still lays many unnecessary roadblocks to doing business. While it has made an effort to improve the business climate over the past few years, other countries have done so more rapidly or more deeply, leading to a relative decline in the Croatian economy's ranking.

Firms in Croatia bear high administrative burdens in terms of time and costs, even without considering the time spent on gathering information on the procedures required. The global financial crisis laid bare some areas that still need attention, namely starting a business, dealing with construction permits, registering property and trading across borders. Luckily, many of the improvements can be done in a cost-effective way, without putting too much stress on the public budget. These areas should be at the core of future reforms.

This paper is based on the reports prepared by the Doing Business organization of the World Bank, which are co-published with the International Finance Corporation.

Ease of doing business

Ease of doing business refers to how easy or difficult it is for an entrepreneur to set up and run a business when complying with relevant regulations. The World Bank report on the topic assesses it by measuring regulations affecting 10 areas of small and medium-sized enterprises (SMEs) operating in a country's largest business city: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency (World Bank 2014). It also separately measures labour market regulation.[1] The report ranks 189 economies by their distance to the regulatory frontier, i.e. their distance to the country with the best practice in the respective field, as well as by an overall score.[2] A high score indicates a regulatory environment that is conducive to setting up and operating a business. It should be noted that the countries that score highest are not those with no regulation, but those where regulations support market interactions without hindering the private sector.

Making it easier to start a business is positively related to firm concentration, which in turn creates jobs and promotes growth. Klapper and Love (2010) find that an improvement in the overall distance-to-frontier score is associated with an increase in new firm density, with the effects being stronger for higher improvements in terms of distance to frontier. Doing Business scores are also found to be positively correlated with inflows of, and extracting more benefits from, foreign direct investment (Corcoran and Gillanders 2012; Anderson and Gonzales 2013), suggesting that Doing Business reflects the overall investment climate in the private sector, beyond the concerns of domestic SMEs.

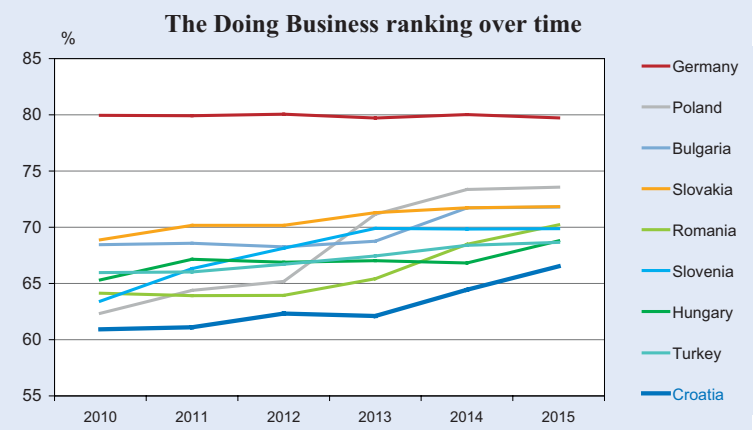
Croatia's performance

Out of 189 listed economies, Croatia ranked the 65th in 2014, gaining two positions compared to the previous year.[3] This corresponds to a distance-to-frontier score of 66.53. Figure 1 shows the development over time of the absolute Doing Business ranking for Croatia and comparison countries, namely Bulgaria, Hungary, Poland, Romania, Slovenia and Slovakia. In addition Germany which ranked the 14th in 2014 is shown for reference. Croatia clearly does relatively badly.

* NERA Economic Consulting, Berlin.
** Ifo Institute.
*** CESifo GmbH. Stefanie Gäbler provided excellent research assistance.

[1] Labour market regulations are not covered in this article; see specific article in this issue.
[2] The methodology was changed in 2014 and the distance to frontier was introduced as a supplement to the simple ranking.
[3] The methodology was changed in the Doing Business Report 2015. Rankings for the previous reports have been adjusted in accordance with the new methodology to allow for direct comparison.

Figure 1



Doing Business Index measured as distance to frontier.

Source: Doing Business Database (2014).

Croatia has introduced a number of regulations in the past decade in an effort to improve matters, earning a place among the 30 economies which improved most between 2013 and 2014 (World Bank 2014).

The relatively poor score stems from the fact that, despite the reforms, some critical areas remain. Figure 2 displays the strengths and weaknesses of the ten fields in Croatia, measured as the distance to the frontier. Figure 3 shows the ordinal ranking in absolute terms. The most problematic indicators will be analysed in detail below, namely starting a business, getting a construction permit, registering property, and trading across borders, in addition to enforcing contracts and resolving insolvency, which, while not ranked poorly, are key to attracting business.

Starting a business (rank 88/189)

Croatia ranks better than, for instance, Germany or the Czech Republic. The number of procedures is fairly low (7) and the time it takes (15 days) is comparable to 14.5 days in Germany. The paid-in minimum capital requirement lies at 26.6 percent of the average per capita income.

And yet its score, at rank 88, is modest and has even slid since 2013. The problem is that other economies have caught up even faster, leading to a relative decline in Croatia's ordinal ranking. It is still not possible to register a limited liability company solely online with the Commercial Court, as the e-signature has not yet been established, and picking up the registration may only be done on Fridays and Tuesdays (World Bank 2014).

Among the measures introduced over the years to improve this indicator are a streamlining of procedures through a one-stop shop, allowing limited-liability companies to file their registration application electronically, and introducing a new form of limited-liability company with a lower minimum capital requirement and simplified incorporation procedures. In addition, reduced notary fees have made starting a business less costly. But, as the score shows, more must be done.

Figure 2

Croatia's distance-to-frontier scores on doing business topics

cardinal measure

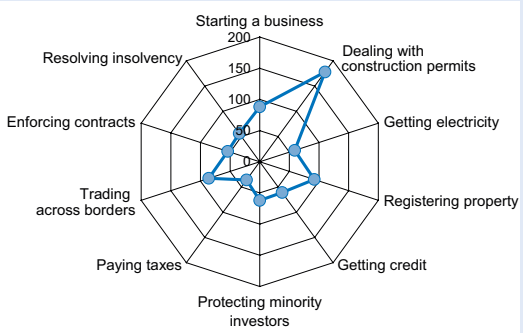
The ranking are based on the average of each economy's distance-to-frontier scores for the 10 topics included in the aggregate ranking. The distance-to-frontier score benchmarks economies with respect to regulatory practice, showing the absolute distance to the best performance in each *Doing Business* indicator. An economy's distance-to-frontier score is indicated on a scale from 0 to 100, where 0 represents the worst performance and 100 the frontier.

Source: Doing Business Database (2015).

Figure 3

Croatia's rankings on doing business topics

ordinal measure



The ranking are benchmarked to June 2014 and based on the average of each economy's ordinal ranking for the 10 topics included in the aggregate ranking. An economy's rank is indicated on a scale from 1 to 189, where 1 represents the best performance and 189 the worst.

Source: Doing Business Database (2015).

The benchmark is New Zealand, where one procedure, half a day and 0.3 percent of per capita income is all one needs to set up a business. The minimum capital required is zero (as is the case for 111 economies out of the 189 in the ranking). A limited-liability company can be registered online by reserving a name and completing the incorporation application, subject to a small fee of currently about 100 euros (Companies Office 2015).

Dealing with construction permits (rank 178/189)

Cumbersome and costly procedures to obtain construction permits not only deter business starts, but tend to foster corruption and create incentives to build illegally. Croatia ranks a miserable 178, worse than Bulgaria, Hungary, Poland or Romania. Clearly, this is Croatia's weak spot for doing business.

Croatia has made some effort to improve this index, with the establishment of a one-stop-shop and enforcement of the building code, and by replacing the location permit and project design confirmation with a single certificate. The time for all procedures has been reduced by about six months, thanks among others through the Physical Planning and Building Act, which relaxed the order of the procedures (building permits can now be obtained prior to paying contribution fees and utilities). Moreover, fees for building permits were reduced. Registering the building with the land registry is now carried out by the municipality without further action by the builder. Despite this, the procedures are still laborious. In 2014 no less than 21 procedures were required, involving the municipal authority, the Inspectorate for Fire at the Ministry of Interior Affairs, the National Croatian Electric Grid, the Waste Collection Department, and the Cadastre, to name just a few. The whole process takes 188 days and costs, in the case studied, 10.9 percent of the building's value.

The benchmark is Hong Kong, where only 5 procedures are required (submission of applications, inspection of the foundation strata, certificate of completion, joint inspection by licensing authorities, obtaining water connection) and take 66 days to complete. In terms of speediness, Singapore leads with 26 days.

Registering property (rank 92/189)

Croatia holds the worst position among its peers, even though it closely follows Germany (89) and Slovenia (90). This ranking represents the procedures, cost and time that buyers and sellers incur by a standard property transfer to a buyer's name. The main institutions involved are the Land Registry and the Cadastre. On-going improvements at the Croatian Land Registry have considerably speeded up the process (World Bank 2015a), reducing if from 956 days in 2006 to 173 days by 2008 and 72 days now. Still, measured by the distance to the frontier, Croatia stopped improving in this field in 2010. The 5 procedures required cost 5 percent of the property's value. The bottleneck is the Land Registry Court, where recording the sale agreement takes more than 60 days. A one-stop-shop was established as part of the 'Real Property Registration and Cadastre Joint Information System (JIS)', launched in 2014 (Uredjena Zemlja 2015), which allows online access to the harmonized land registry and cadastre databases.

The benchmark is Georgia, with only one procedure which can be completed between one and four days. Purchase agreements do not need to be notarized, and property may be registered online. Extracts are also issued online.

Trading across borders (rank 86/189)

The indicator measures the number of documents, the time and costs associated with exporting and importing a standard product by sea transport. Despite Croatia's favourable geographic location, with good access to the coast and a number of well-equipped seaports, it ranks only 86, bested by such landlocked peers as Slovakia (71) and Hungary (72). Exporting/importing a standard container of goods requires six/seven documents, takes 16/14 days and costs 1,335 US dollars/1,185 US dollars, respectively. Recent improvements to the physical infrastructure and the information system at the port of Rijeka made trading across borders easier, but insufficiently equipped transport facilities in the hinterland hamper its role as a transit hub to the European Union.

In Singapore, the benchmark in this field, it takes 1 to 2 days and only three documents to export or import, namely a bill of lading, a commercial invoice and a customs declaration. Croatia, in addition, requires a cargo release order, a packing list, a clean report of findings and terminal handling receipts, taking between 7 and 8 days.

Enforcing contracts (rank 54/189)

This is Croatia's second-best field, where it ranks 54. It shows the effectiveness (in terms of time, costs and overall complexity) of commercial dispute resolution. It takes 572 days, 38 procedures and costs 13.9 percent of the claim to enforce a contract, well in line with the comparison groups but with relatively low costs associated with dispute settlement. In 2013, Croatia streamlined litigation proceedings and transferred certain enforcement procedures from the courts to state agencies.

Here, Singapore is again as the benchmark, with a low number of procedures and the option of electronic filing of court cases.

Resolving insolvency (rank 56/189)

A robust system for resolving insolvency ensures the efficient return of a firm to business operation and generates trust among investors, thereby increasing access to finance. Croatia, with 3.1 years to solve the procedure and costs amounting to about 14.5 percent of the debtor's estate value, ranks well in this field among its peers. It is, however, more likely that the procedure results in the liquidation of the firm rather than in its continuation as a going concern. The recovery rate for creditors is 30.5 cents to the dollar, a low value compared to, for instance, Finland, which ranks best with 90.2 cents on the dollar, and where it takes less than one year to complete the procedure.

With its recent Pre-Bankruptcy Settlement Agreement Act, Croatia introduced an out-of-court restructuring procedure where creditors and debtors can reach an agreement. It allows companies' survival and therefore increases creditors' (including the state) chances of repayment of obligations. Pre-bankruptcy must be completed within 120 days.

Policy proposals

Full implementation of e-government processes, by establishing the e-signature as a fully valid element for all relevant procedures, is key, as shown by all the globally best-ranked economies. Going electronic would also curtail the opportunities for corruption along the many procedural steps. The restriction imposed by being allowed to pick up a business registration only on Tuesdays and Fridays should be eliminated forthwith.

In the field of construction permits, unnecessary regulations should be removed. Following Singapore's lead, procedures in registering property could be differentiated for industries with different risk profiles, allowing for easier procedures (such as online registration) for low-risk industries. To speed up the process of registering property, Croatia could introduce maximum duration on certain 'bottleneck procedures', such as the request for property registration at the Land Registry Court. Building of the electronic JIS database should be speeded up.

Trading across borders would profit from a reduction in the number of necessary documents. Also, Croatia should invest in complementary infrastructure in the hinterlands to make Croatia's ports a competitive alternative to other European ports and to better exploit its favorable geographic location.

Corruption must be tackled rigorously. Croatia ranks 61st out of 174 economies, affecting its international competitiveness. Among its prime peers, only Bulgaria and Romania are more corrupt. Sound institutions, transparent regulations, electronic procedures and a reduction in the number of steps required for the granting of permits or the registrations of businesses and property would reduce the grounds and opportunities for corruption.

References

Anderson, J. and A. Gonzales (2013), *Does Doing Business Matter for Foreign Direct Investment?,* World Bank Doing Business, Washington DC.

Corcoran, A. and R. Gillanders (2012), *Foreign Direct Investment and the Ease of Doing Business,* School of Economics Working Papers 201219, University College Dublin.

Companies Office New Zealand (2015), *Starting A Company,* http://www.business.govt.nz/companies/learn-about/starting-a-company.

Eurostat (2015), Households Having Access to the Internet by Type of Connection: Percent of All Households, http://ec.europa.eu/eurostat/tgm/download.do?tab=table&plugin=1&language=en&pcode=tin00073.

Klapper, L. and I. Love (2010), *The Impact of Business Environment Reforms on New Firm Registration,* World Bank Policy Research Working 5493.

Uredjena Zemlja (2015), *One Stop Shop*, http://www.uredjenazemlja.hr/default.aspx?id=136.

World Bank (2014), *Doing Business 2015: Going Beyond Efficiency,* Washington DC.

World Bank (2015a), *Registering Property,* http://www.doingbusiness.org/data/exploretopics/registering-property/reforms.

Infrastructure and Energy Supply in Croatia

Johannes Steinbrecher*

Infrastructure is considered essential for the economic development of a region. A well-developed transportation and communication infrastructure reduces the effect of distance between regions, connects international markets at lower cost and makes it easier for workers to move across regions to the most suitable jobs. A reliable and robust electricity supply ensures that modern factories with sophisticated production technologies can work unimpeded.

Accession to the European Union provides opportunities for and poses challenges to the Croatian economy. Adequate infrastructure will be a crucial prerequisite for domestic firms to compete with European competitors and explore foreign markets.

Croatia's infrastructure: already competitive but strategic adjustments needed

Given Croatia's stage of economic development, an already well-developed and relatively competitive infrastructure is to be expected. Indeed, Croatia's infrastructure is competitive compared to that of its peer countries, but still lags behind most developed countries (see Figure 1i)).

While Croatia scores relatively high in the Global Competitive Index (CGI) for infrastructure (y-axis), only few peer countries have lower Total GCI scores (x-axis), indicating that Croatia's overall competitiveness is still relatively low. Clearly, Croatia's relatively weak overall competitiveness can hardly be attributed to an inadequate supply of infrastructure. Indeed, only 2.5 percent of the Global Competitiveness survey responses addressed infrastructure as an obstacle for doing business in Croatia (see Figure 1ii).

* Ifo Institute.

The following sections discuss in more depth whether Croatia's infrastructure is already capable of providing the required supporting functions, and to which extent reforms seem necessary, focusing on three areas: first, transport infrastructure, a prerequisite for exploiting Croatia's strategically advantageous location. Second, broadband internet, as a general-purpose technology with strong impact on knowledge-intensive activities across all economic sectors. Finally, energy supply, as a crucial requirement for sophisticated production technologies and services.

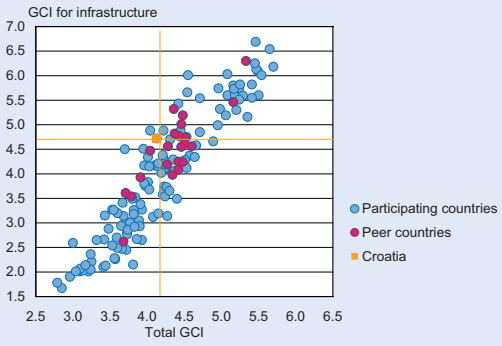
Transport infrastructure – focus on rail- and waterways needed

Croatia's location within Europe – with core transport corridors crossing the country and several seaports on the Adriatic coast – places it at a key node of the transport strategy of both the EU and neighboring

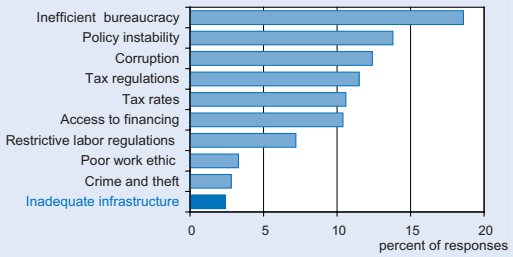
Figure 1

Croatia's infrastructure and general competitiveness

i) Total competitiveness vs. infrastructure



ii) Most problematic factors for doing business, 2015



The upper chart depicts the overall scores and scores for infrastructure of the Global Competitive Index (World Economic Forum) for the 144 participating countries, the peer group countries and Croatia.
The higher the score, the higher the competiveness of a country.

Sources: World Economic Forum (2014); own calculations.

countries. An efficient transport infrastructure will be crucial to exploit these geographic advantages. However, the competitiveness of the transport infrastructure varies heavily from mode to mode.

While the road transport network is already well developed and quite competitive, the railway sector clearly lacks competitiveness (World Economic Forum 2014; World Bank 2013). The share of single tracks and non-electrified tracks is still high, with few improvements in the past ten years (Croatian Bureau of Statistics 2014b). In consequence, travel times are very long, in particular if compared to road transport. Moreover, there is still no railway connection to Dubrovnik, Ploče and Istria (HŽ Infrastruktura 2014).

There are several seaports located along Croatia's mainland coast, with Rijeka and Ploče as the most important ports for freight, and Split, the most important for passengers. Rijeka and Ploče are strategically located next to main transport corridors. While major improvements have been made to some of them, further upgrades are still needed to make them truly competitive. This is particularly true for the port of Rijeka, given its strong competitors nearby.

Croatia has two main inland waterways: the Danube as an international transport corridor, and the far less important Sava (most-upstream port at Sisak). Transport volume via inland waterways is still very low; strong growth rates in recent years have been mainly driven by transit transport on the Danube (Croatian Bureau of Statistics 2014b). To fully realize the significant inland waterway transport potential, it is indispensable to connect the inland ports to the main transport corridors and improve international cooperation and coordination with neighboring countries.

Except for tourism, air transport does not play a significant role in the present Croatian transport sector. The competitiveness of Croatian airports is relatively low, their only advantage being that they do not face strong competition from other international airports.

Broadband internet – increasing internet usage remains the main challenge

Overall broadband internet accessibility is (almost) at the EU average, albeit with unequal coverage between regions, while that of high-speed Next-Generation-Access (NGA) lies still significantly below the average (European Commission 2014a and 2014b). Rural areas lack NGA entirely (European Commission 2014c).

Broadband penetration, in turn, is relatively low compared to both overall accessibility and the EU average, but has increased significantly in recent years and is already higher than in several advanced EU countries, such as Greece and Portugal. More than 60 percent of individuals in Croatia used the internet at least once a week in 2014 (compared to 32 percent in 2007), while the share of those who have never used the internet decreased from 56 percent in 2007 to less than 30 percent in 2014 (Croatian Bureau of Statistics 2014a). The usage of internet-related business by individuals is still relatively low, but Croatian enterprises seem to be eager to use online services and e-commerce. The usage of e-government services is still low, with only 25 percent of individuals using such services in 2013, one of the lowest rates in the EU. One of the main reasons may be the relatively low quality of digital public services: problems when using e-government websites (such as malfunctions or outdated information on public websites) and the lack of important online services are the main obstacles for stronger usage.

Fees for broadband internet access are relatively high (particularly for high-speed access). Besides high prices, a lack of digital skills seems to be the main obstacle for a more extensive usage of internet services: 60 percent of the Croatian population has no or only low digital skills (EU average: 47 percent – see Digital Agenda Scoreboard 2014).

Energy supply – relatively low consumption, but also low efficiency

Accession to the EU has brought both new challenges and opportunities to Croatia's energy policy. The commitment to the EU's 20-20-20 targets and enhanced competition with other European countries underscores the need for affordable and reliable energy sources. On the other hand, the EU membership opens opportunities for the development of a sustainable energy infrastructure through cooperation and EU funding.

The Croatian power system is relatively small. The domestic power plants have a total capacity of ap-

proximately 4,000 MW, compared to a peak demand of approximately 3,200 MW (European Commission 2014d). Although potentially self-sufficient, the high energy import shares indicate a relatively low level of efficiency in the domestic power system: obviously, importing energy is more (cost-)efficient than resorting to domestic production. In 2013, 52.3 percent of the gross inland energy consumption was covered by net imports. In addition, the share of transmission and distribution losses is one of the highest in Europe, lying 100 percent above the EU average. Insufficient transmission network capability could also limit the capacity for generation from renewable energy sources (RES).

The main energy sources in gross energy consumption are currently petroleum products, gas and RES (mainly hydropower). Croatia has significant RES potential, but its importance is still relatively low, despite the large hydropower plants. The transport sector is the main consumer, with 35 percent of final energy consumption (90 percent of which being accounted for by road transport). Residential accounts for 29 percent, industry for 19 percent, and services and other sectors for 16 percent of final energy consumption.

Electricity prices (after taxes) are below the EU average (ACER 2014), but in purchasing power parity terms they are about EU average for domestic consumers and above the average for industrial consumers. Although 100 percent of the population has access to electricity, consumer conditions in energy markets are quite unfavorable, for instance in terms of choice, ease of switching, and price comparison (ACER 2014).

Conclusion

Based on the foregoing, the following conclusions can be drawn to improve Croatia's infrastructure. Croatia ought to increase competition and market discipline in order to improve both consumer conditions and the competitiveness not only of infrastructure operators, but of all domestic firms. For this purpose, administrative burdens for business formation and new competitors should be reduced and the corporate governance of state-owned firms improved. The improvement of infrastructure's competitiveness will need substantial investments. Given the fiscal situation, the budgeting process should be reconsidered: subsidies to state-owned enterprises should be reduced and public investments should be optimized with respect to EU funding opportunities. The high indebtedness of state-owned companies is a burden for the operating business, in particular with respect to market liberalization or privatization. Independent of the fiscal situation, subsidies and government funds should not be granted to cover operating costs. High debts and operating losses indicate structural problems and should be countered by restructuring programs and a professionalization of the management.

The development of a sustainable infrastructure and efficient operators will also require a stable economic and political environment to attract know-how and investments from strategic partners. Given its geographically advantageous location, Croatia should *carefully prioritize traffic projects and policy* and focus on the strategic location of ports. For this purpose, intermodal transport should be promoted. This will require a further increase in competitiveness of ports and railways. Transport infrastructure policy should focus on quality instead of quantity and ensure an efficient flanking infrastructure.

Besides an improved transport network, transport policy must *ensure the sustainability and efficiency of transport sector operators*. The lack of competitiveness of its operators drives down the competitiveness of the entire transport sector. To increase competitiveness, the corporate governance of all operators (regardless of their ownership structure) should be streamlined and improved, all the way to the possible privatization of less strategic operators. Furthermore, costs must be closely monitored and the quality of the services raised to benchmark standards.

Significant improvements in broadband accessibility have already been made, but a *further increase in accessibility and speed of broadband internet is necessary* to strengthen Croatia's competitiveness, particularly as regards the accessibility to NGA technologies. The national reform program's objective to 'ensure the availability of broadband access under equal conditions throughout the whole Croatian territory' should be pursued with due attention to the costs and benefits of the technology employed and careful account of regional demand patterns. The extension of ultra-high-speed and NGA internet access should primarily focus on economic core regions, while mobile broadband should continue to be pursued as an efficient option to provide internet access in rural and inaccessible areas.

Since the positive economic effects of broadband internet access result from higher penetration rates (not accessibility *per se*) a further *reduction of obstacles to higher broadband penetration rates* is needed. International experience suggests that the main obstacles for broadband subscription in Croatia – high prices and low digital literacy – can be tackled in several ways: financial incentives for broadband subscriptions, awareness and training programs, and improved quality of e-government services.[1]

Croatia also needs to *secure a reliable and affordable energy supply*. The high share of energy imports indicates a low efficiency level of the domestic energy system. A main goal therefore should be to increase the efficiency of existing and future power generation and transformation. To this purpose, the decommissioning of power plants must be countered by an early and appropriate planning of replacements. Moreover, a further modernization of the electricity grid must also be pursued to decrease distribution and transmission losses and to accommodate increasing capacity needs resulting from higher shares of RES in energy production. In addition, Croatia should leverage its position as a member of the anticipated integrated European energy market to ensure access to reliable and affordable energy imports.

While Croatia's per capita energy consumption is already relatively low, in terms of energy consumption by unit of GDP Croatia ranks in the lower third of the EU, indicating significant potential to increase energy efficiency. Therefore, Croatia should *promote resource-efficient growth*. Energy efficiency should be enhanced in all relevant dimensions: energy production, distribution, and consumption. To ensure an efficient energy production and distribution, the technologies chosen should depend solely on their suitability (location of production and demand pattern) and cost-efficiency rather than on political or other reasons. A combination of technologies should be considered whenever portfolio effects can be expected, such as continuous production *via* combination of photovoltaic energy during the day and wind energy at night. Regarding energy consumption, all sectors have significant potential to increase energy efficiency, in particular the transport sector, a main energy consumer.

[1] An extensive survey of demand-side programs is provided by Hauge and Prieger (2009).

References

ACER (2014), *ACER/CEER- Annual Report on the Results of Monitoring the Internal Electricity and Natural Gas Markets in 2013*, October.

Croatian Bureau of Statistics (2014a), *Usage of Information and Communication Technologies (ICT) in Enterprises, 2014, First Results*, http://www.dzs.hr/Hrv_Eng/publication/2014/02-03-01_01_2014.htm.

Croatian Bureau of Statistics (2014b), *Statistical Yearbook of the Republic of Croatia 2014*, Zagreb.

Digital Agenda Scoreboard (2014), *Digital Agenda for Europe - A Europe 2020 Initiative*, European Commission, http://ec.europa.eu/digital-agenda/download-scoreboard-reports.

European Commission (2014a), *Broadband Coverage in Europe 2013 - Mapping Progress towards the Coverage Objectives of the Digital Agenda*, Final Report, Luxembourg: Publications Office of the European Union.

European Commission (2014b), *Telecommunications Data Files, Digital Agenda Scoreboard 2014*, http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=5935.

European Commission (2014c), *Implementation of the EU Regulatory Framework for Electronic Communications - 2014*, Brussels.

European Commission (2014d), *EU Energy Markets in 2014*, DOI: 10.2833/2400, October, Brussels.

Hauge, J. and J.E. Prieger (2009), *Demand-Side Programs to Stimulate Adoption of Broadband: What Works?*, Working Paper, http://ssrn.com/abstract=1492342.

HŽ Infrastruktura (2014), *2015 Network Statement*, December.

World Bank (2013), *Croatia - Railway Policy Note*, World Bank Report 78689, Washington DC.

World Economic Forum (2014), *The Global Competitiveness Report 2014–2015*, Geneva.

Innovation Policy for Croatia

Nadine Fabritz* and Oliver Falck**

Innovative capacity in Croatia

Modern growth theory identifies knowledge creation as a primary determinant of long-term growth (e.g. Aghion and Howitt 1998). Knowledge creation is meant to be both the acquisition of individual competences (human capital) and the invention and market introduction of hitherto unknown products and production processes (innovation).

As measured by the EU's Innovation Union Scoreboard, which quantifies innovation performance along 25 dimensions, Croatia is a 'moderate' innovator and falls into the third out of four categories, together with the Czech Republic, Hungary, Poland and Slovakia. With a low growth rate in innovative capacity, Croatia even runs the risk of falling into the lowest category, of modest innovators, in future evaluations (European Commission 2014). In fact, Figure 1 reveals that the absolute number of patents with the European Patent Office (EPO) as well as the PCT,[1] which can be seen as a measure of significant innovations, peaked in 2002 and 2003, respectively, and that the trend had been negative subsequently. In terms of fields of technology, patent applications filed with major international patent offices (EPO, PCT) over the past few years have been predominantly in the fields of pharmaceuticals and ICT.

Božić (2011) investigates the reasons for the low innovation performance of Croatian firms, focusing on the decision to abandon or delay innovations. Based on data from the Croatian Community Innovation Survey in 2006, she examines the innovative activity of over 1,000 firms. The results suggest a number of constraining factors that play an important role in abandoning innovation projects in Croatia, including firms' lack of external and internal sources of financing, insufficient information on existing technologies, and the presence in many markets of a dominant incumbent that discourages innovation. Among the main reasons for delaying innovation projects are a lack of external finances and information, a lack of qualified personnel, and the unsuccessful search for cooperation partners in R&D.

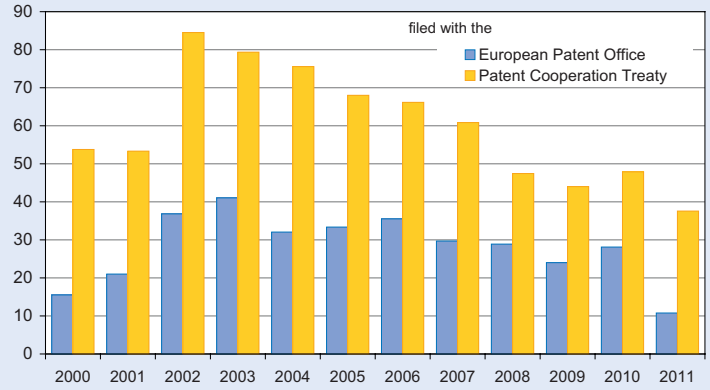
Leverage points for innovative capacity

Increase FDI

On average, multinational companies are generally more productive and innovative than domestic firms (e.g. Criscuolo 2005). Foreign direct investments can thus be a substantial source of technology transfer for transition countries, and they could help Croatia to move closer to the technology frontier. Figure 2 shows the relative, and increasing, role that foreign

Figure 1

Total patent applications from Croatian inventors[a] filed 2000–2011



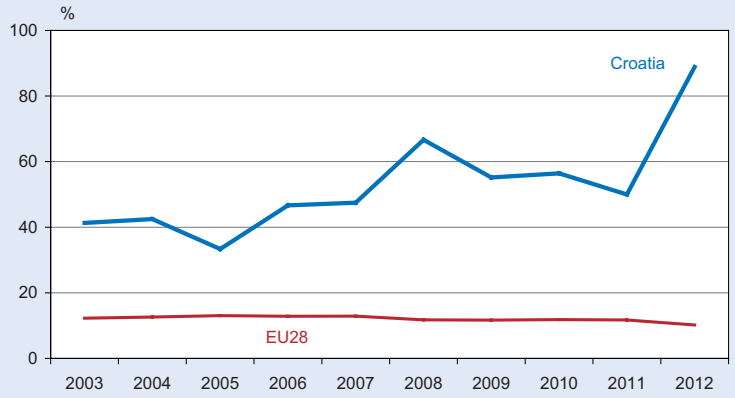
[a] Inventor's country of residence.

Source: OECD.

* NERA Economic Consulting, Berlin.
** Ifo Institute.
[1] PCT = Patent Cooperation Treaty. This system of 148 cooperating states allows applicants who seek patent protection in several countries to file one single international application. A PCT application is equivalent to a regular filing in each of the PCT contracting states (Intellectual Property Office 2015).

Figure 2

Foreign ownership of domestic inventions in patent applications to the European Patent Office



Source: Eurostat.

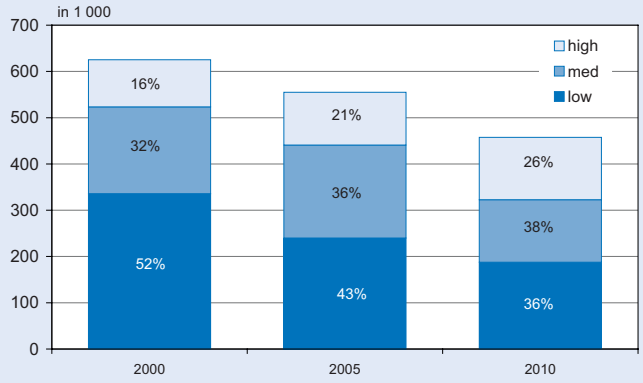
owners play in patent applications, especially compared to the EU average. Thus, the best innovation policy for Croatia is probably to undertake structural reforms aimed at improving the conditions for FDI.

Undertaking such reforms is probably also the best policy to prevent the flight of human capital. Croatia is suffering from brain drain, i.e. the phenomenon that highly skilled people leave the country, which may have severe consequences for the economy's future innovative capacity. In fact, while in the 2000s the overall, and still sizeable, number of Croats living in OECD countries has decreased, the share of highly-skilled among them has increased from 16 to 26 percent (see Figure 3). Policymakers should thus aim at creating favorable framework conditions in order to keep, and attract, human capital.

Figure 3

Brain drain from Croatia

Total number of Croatia nationals aged 25 years and older, living in each of the 20 OECD destination countries considered



Source: IAB Brain Drain Data.

Mobilize R&D expenditure in the private sector

Research and development expenditure is low in Croatia. In 2013, only about 0.8 percent of GDP was spent on R&D, compared to an average of 2 percent in the European Union (Eurostat, 2015). Between 2011 and 2013, Croatian expenditure in R&D was highest in the technology fields of engineering (39.5 percent), life sciences (21.4 percent), biomedicine and health (16.8 percent), and biotechnical sciences (8.7 percent). Industry sectors with the highest R&D expenditure are pharmaceuticals, telecommunications, motor vehicles, manufacture of food and beverages, and computer programming. However, R&D funding is dominated by the public sector with comparably low R&D expenditure in the private sector. This development calls for policies that stimulate private sector innovation activities.

The What Works Center for Local Economic Growth at the London School of Economics performed an evidence report for R&D grants, loans and subsidies as well as R&D tax credits (What Works Center for Local Economic Growth 2015). The goal of this report was to collect rigorous evidence on the effectiveness of these measures in OECD countries. After reviewing around 1,700 studies, the authors found that only 63 studies met minimum standards of state-of-the-art policy evaluations, and that R&D grants, loans and subsidies can positively impact private R&D expenditure, although the effects are not always positive since public support might crowd out private investment. R&D grants, loans and subsidies are more likely to improve outcomes for small to medium-size companies than for larger ones. Programs that emphasize collaboration perform better than those that just support single private firms, while those that target particular production sectors tend to do worse in terms of increasing private R&D expenditure and innovation, compared to those that are

sector-neutral. Also, R&D tax credits can positively impact private R&D expenditure whereby, in particular among small firms, given that they are likelier to face greater financial constraints, making them more responsive to changes in tax credits.

According to the international evidence, one means of stimulating private R&D expenditure in Croatia is R&D grants. Smaller grants targeted at Croatian SMEs across all sectors may be the right measure to kick-start R&D projects in SMEs. A focus could be on collaborative R&D projects. Furthermore, innovation vouchers that encourage cooperation between the applicant and a research institution may help SMEs to cross the bridge towards science and to facilitate knowledge transfer. R&D grants and innovation vouchers are relatively cheap measures compared to general R&D tax credits, in particular when the R&D tax credit is in proportion to the level of the expenses instead of to the increment of R&D. Therefore, in a strained-budget situation such as that prevailing in Croatia, R&D tax credits might not be the right choice for the country.

Another means of simulating private R&D expenditure in Croatia is an increased public procurement activity, as shown in an evidence report prepared by Falck and Koenen (2016). These so-called demand-side innovation policies, such as public procurement of innovation, can act as a pull-factor for private R&D expenditure. However, evidence also suggests that there is a high risk of public money crowding out private money, an effect that can be reduced by introducing competition for public funds. According to the World Economic Forum's Global Competitiveness Index 2014-2015, Croatia ranks 129 (out of 144) in the public procurement for technological products to increase demand for innovations. The drawback of such procurement policies is that they do not alleviate the pressure on the public budget. In addition, just as it is the case with R&D funding, discretionary decisions on which technology fields to promote must be based on sound evaluation of the internationally competitive potential of Croatian industries. In this context, public procurement of innovative eGovernment solutions could generate a double dividend for Croatia by increasing the efficiency of the public administration and increasing private R&D in a technological field with high potential for spillovers.

Summary

Croatia risks sliding down to the category of 'modest innovator' in the European Union. In order to increase Croatia's innovation capacity, a combination of both the right framework conditions and an active innovation policy that mobilizes R&D expenditure in the private sector seems appropriate. The structural reforms needed to attract FDI are one prong of a successful innovation strategy, since FDI generates knowledge transfer and creates opportunities for high-skilled Croats so that they are less inclined to leave their home country. The other prong includes measures of active innovation policy that do not overly strain the public budget. Sector-neutral R&D grants to SMEs, innovations vouchers and a well-designed public-procurement strategy of innovation are measures that have proven to be effective in increasing private R&D expenditure.

References

Aghion, P. and P. Howitt (1998), *Endogenous Growth Theory*, Cambridge: MIT Press.

Božić, L.J. (2011), "Constraints to Innovation Activities in Croatian Enterprises", *Economic Review* 62, 177-189.

Criscuolo, C. (2005), *The Contribution of Foreign Affiliates to Productivity Growth: Evidence from the OECD Countries*, OECD Science, Technology and Industry Working Papers 2005/8.

Falck, O. and J. Koenen (2016), *Development and Implementation of a Demand-Side Innovation Monitoring System*, Brussels: European Commission.

Intellectual Property Office (2015), *Patent Cooperation Treaty (PCT) for Private Applicants*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/478156/PCT-Private-App-Jan-2016.pdf.pdf.

What Works Center for Local Economic Growth (2015), *Evidence Review 9: a) Grants, Loans and Subsidies; b) R&D Tax Credits*, London.

Debts, Deficits and Multiple Equilibria: A New Role for ECB Monetary Policy?

Mats Persson*

Introduction

The debt crisis has now plagued the Eurozone for over half a decade, and the body of literature dealing with it is enormous. The various rescue measures taken by the EU, the ECB and the IMF were motivated by the view that bond markets were malfunctioning, and thus different types of interventions were warranted.[1]

When discussing these interventions with fellow economists, I hear the argument that the government bonds of the crisis countries have been incorrectly priced for long periods of time. A specific claim is that prior to the outburst of the crisis in early 2010, Greece could borrow at the same interest rate as Germany – which shows how irrational the markets were in those days. Now, this statement has been proven plainly untrue; Greece could not borrow at the same interest as Germany during the years preceding the crisis.

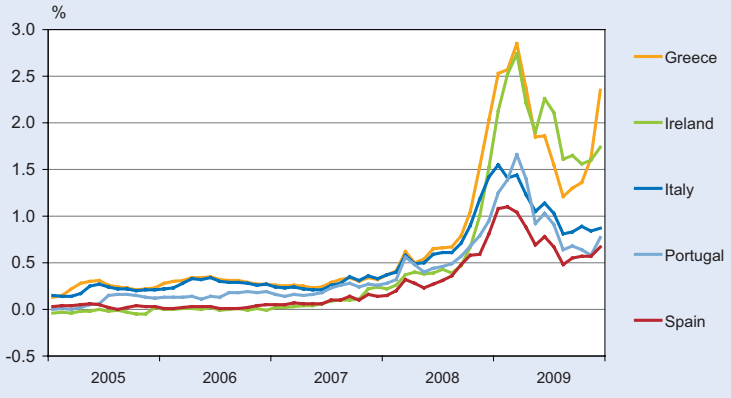
Figure 1 shows the interest rate spread against German government bonds for the five most important crisis countries from 2005 to 2009 (for interest spreads during later years, see Figure 2 below). We see that the Greek bond had a premium, compared to the German bond, of around 25 basis points as early as 2005–2007. This also holds for most of the other crisis countries, and one might perhaps explain this spread by a liquidity premium – although the volumes traded in Spanish and Italian bonds were fairly large, and the market for these bonds seemed quite liquid, even back in 2005 and 2006. In 2007, however, the interest spreads start to increase; for Greece and Portugal they reached 50 basis points in early 2008, and 100 basis points half a year later. In 2009, the spreads fluctuated around 200 basis points for Greece and Ireland, and between 50 and 150 basis points for Spain, Italy and Portugal.

One may, of course, say that in the case of Greece, the spread was too small, given that Greece's public finances were in such bad shape. Or one may argue that the spread was too large, given that the true state of Greek public finances was hidden from the market; the falsifications of Greece's national accounts were not revealed until early 2010. In any case, the spread was not zero. For whatever reason, the market placed some kind of risk premium on the interest rate of Greek bonds – as well as on bonds of the other crisis countries. Those premia were too large to be explained by low liquidity, and they grew particularly large in 2008 and 2009.

Therefore, it seems somewhat unwarranted to say that the behaviour of interest rates show that the bond markets were malfunctioning prior to the crisis. If an-

Figure 1

Interest spreads of 10-year government bonds for a number of European countries against Germany, 2005–2009



Source: Eurostat.

* Stockholm University. This paper is based on my Félix Neubergh Lecture, given at the University of Gothenburg on 4 November 2015.

[1] For a recent collection of papers on the crisis, see the contributions in Baldwin and Giavazzi (2015). Sinn (2015) provides a discussion of the measures aimed at dealing with the Greek problems.

ything, the bond markets seemed to express concern over the future path of government indebtedness – a worry that, given later developments, turned out to be well-founded. But even if the markets were well-functioning prior to the crisis, there is still an argument for intervention during the crisis. I will now turn to that argument.

Multiple equilibria: the theoretical concept

The argument is largely theoretical – although it does, of course, have practical implications. It can be shown that, in a model of rational investors, expectations about a future default can generate multiple solutions to the price (and thereby the interest rate) of a bond. Let us assume that a country issues government bonds. If the market considers the probability of default as low, the effective interest on these bonds will be low. If, by contrast, the market regards the probability of default as high, the effective rate of interest will be high; in fact, the cost of borrowing may then be so high that the country's stock of debt, which has to be rolled over at regular intervals, is not sustainable. Thus, the probability of default becomes an immediate reality, and the market's expectation of default becomes a self-fulfilling expectation.[2]

Thus, there may be multiple rational-expectations equilibria for such a country. For instance, with two equilibria, there is one low-rate and one high-rate equilibrium. Similar phenomena arise in many contexts, not only in models of financial markets. For instance, in models of crime there are often two equilibria: one 'good' low-crime equilibrium and one 'bad' high-crime equilibrium (see Persson and Siven 2006). The policy problem is then to ascertain that if the economy has ended up in the bad equilibrium (with high crime, or a high interest rate) it will move to the good one (with low crime, or a low interest rate).

However, there is a difficult empirical problem associated with this largely theoretical literature. Let us assume that we observe a crime rate (i.e. a percentage of the population engaged in crime) or a government borrowing cost of, say, ten percent. How do we know that this is a bad equilibrium, and that by suitable policy measures we can attain a good equilibrium with only five percent crime or a five-percent borrowing cost? The ten percent we observe might actually be the low-crime equilibrium, and by changing some parameter in the model, the system might jump to a high-crime equilibrium of, say, twenty percent.[3] In fact, we do not even know whether there are multiple equilibria in reality, or whether the state we observe is the only possible equilibrium state.

In principle, we could estimate the model and find out exactly where we are, and whether there are other equilibria just around the corner. In practice, however, we simply do not have that kind of empirical knowledge. While the theoretical results are unambiguous – multiple equilibria can occur – the empirical results are, to the best of my knowledge, non-existent. We simply do not know what kind of equilibrium we are observing in reality. Working out empirical methods for identifying the character of a real-world equilibrium is an important topic for future research.

Multiple equilibria: the role of monetary policy

The notion of multiple equilibria, some of which are 'good' and some are 'bad', thus raises difficult empirical questions. Nevertheless, one may argue that in connection with sovereign debt, the problem is simpler than in other contexts (like crime). In fact, we have cases where a country has enjoyed a relatively low borrowing cost for a long time – and then, all of a sudden and for no obvious reason, the interest rate skyrockets. One may then argue that this rise has been caused by the country being pushed by some external and irrelevant factor from a good to a bad equilibrium.

The comparison to the economics of crime is instructive. There we do not have much material for comparison; observations are few, and if one country has a higher crime rate than another, there are always many differences between the countries that one may point at without having to invoke the theory of multiple equilibria. By contrast, in financial markets there is a much larger number of observations, both across time and across countries, and the existence of multiple equilibria may seem as good an explanation for country differences as any other.

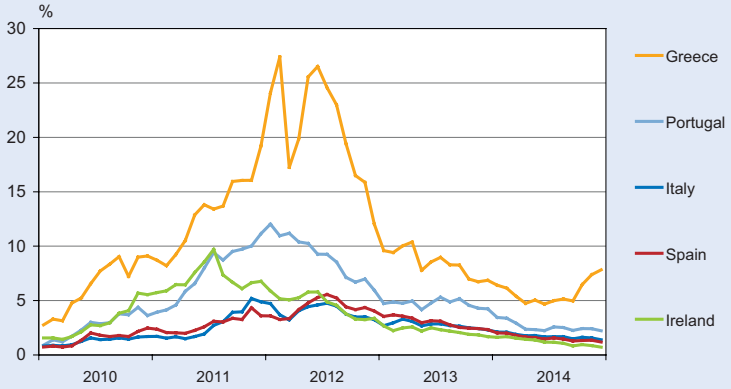
[2] The model is spelled out in Calvo (1988); and Cole and Kehoe (2000).

[3] Please note that we cannot rely on comparative-statics results to determine what type of equilibrium we are in. Unstable equilibria usually display 'perverse' comparative statics (e.g. the borrowing cost is decreasing in the degree of indebtedness, or the crime rate is decreasing in the severity of punishment). But if there are several stable equilibria, they may all display similar, 'normal' comparative-statics properties.

In fact, when the Greek borrowing costs skyrocketed in early 2010, many commentators considered this development 'unreasonable'. Unreasonable would seem to suggest that Greece was suddenly pushed from a good to a bad equilibrium. Such an argument obviously disregards the notion that the interest rate soars 'for no obvious reason'. In fact, the revelation in early 2010 of the faked Greek national accounts may be regarded as an obvious reason.

Figure 2

Interest spreads of 10-year government bonds for a number of European countries against Germany, 2010–2014



Source: Eurostat.

Let us now look at the interest rates of some of the other crisis countries from 2010 onwards (Figure 2). We see that the Greek rates continue to increase to 'unreasonable' levels in 2011 and 2012. As for the interest rates of Spain, Portugal and Italy, there may initially have been fears of manipulations of the national accounts in those countries too, but their national accounts were soon found to be reliable – and nothing dramatic happened to their interest rates during 2010. Their spreads against the German Bund did, however, increase over the years, to a maximum of 5 percent in 2012 for Spain and Italy, and to a maximum of 10–12 percent in 2011 for Ireland and Portugal.

Disregarding the development in specific countries, we may nevertheless discuss the theoretical model. Therefore, let us assume that we somehow know that the present interest rate has been caused by self-fulfilling, pessimistic expectations and that there is another, lower interest rate just around the corner. This means that we have abstracted from the practical problem of distinguishing between *illiquidity* and *insolvency*. Distinguishing between these two concepts may be difficult in practice; and I will return to this issue below.

We thus assume that we somehow know that a country is basically solvent, but that it for some reason has ended up in a high-interest equilibrium, with such high borrowing costs that it would become insolvent. There is then room for the central bank to get things right. By buying government bonds in the market, the central bank drives up the price of the bonds, thereby driving down the interest rate – and, ideally, the 'good' equilibrium can be thus attained.[4] There is a terminology for such a policy: it says that the central bank acts as the government's 'lender of last resort'; or that it provides a 'monetary backstop'. In fact, many economists claim that the ECB functioned successfully as such a lender during the Eurozone crisis (for references, see footnote 9 below).

The above mainly being a theoretical argument, there is a theoretical counter-argument. Let us assume that a country is in an expectations-driven, bad equilibrium. In the ideal case, an intervention by the central bank would not affect inflation; one can show that the intervention would be automatically sterilized. But since we are in a world of expectations that are perhaps not entirely justified, observing the central bank taking actions in the bond market might fuel fears of the bank monetizing government spending and thereby creating inflation. The country might then move from a situation with a bad equilibrium with self-fulfilling expectations about *default* to another bad equilibrium with self-fulfilling expectations about *inflation*.

This model soon becomes very complicated and it is not obvious whether one equilibrium is better than the other. The scope for the central bank to act as a successful lender of last resort to the sovereign is therefore rather difficult to analyse theoretically – and without a clear-cut theoretical model, it is probably impossible to analyse empirically. There may be cases where the central bank will improve the situation and other cases where it will make the situation worse. It all depends on the model parameters – and we have very little knowledge about the true values of those parameters. At the same time, there are large sums at stake among the private banks that own sovereign debt, and

[4] See Corsetti and Dedola (2013) for the details of this model.

one may be certain that those banks – *via* their lobbying organisations – will swiftly present evidence in favour of a solution whereby the central bank bids up the prices of various assets held by the banks.

In particular, there is one argument that might be pursued: the above model, by Corsetti and Dedola (2013), applies to one individual country with its own central bank. In a monetary union, with many countries and one central bank for all of them, the argument is simpler. If ECB functions as a lender of last resort to a small member state like Greece, the effect on the union's inflation rate will be negligible. Even if we were sure that the ECB was monetizing Greek spending, this would hardly affect overall inflation. Thus, a bad rational-expectations equilibrium with high inflation is very unlikely to emerge (although we cannot dismiss it altogether, since the model deals with expectations that are unfounded, but that can nevertheless emerge and push the whole economy to another equilibrium). If we choose to abstract from multiple equilibria in terms of inflation, but retain the notion of multiple equilibria in terms of default risk, the policy conclusion is clear. The ECB should intervene when a small member country has ended up in a high-interest equilibrium – still assuming, of course, that the ECB can distinguish between illiquidity and insolvency.[5]

Does the 'multiple equilibria model' help us understand what happened during the crisis?

According to the model, a bad equilibrium can emerge for a country that is, in every relevant aspect, identical to a country in a good equilibrium. The empirical question now is whether the crisis countries were identical to the non-crisis countries in every relevant aspect. Table 1 shows data on the budget deficits for all EU countries during the period 2009–2015.

Obviously, if multiple equilibria existed, they did not hit countries in an arbitrary fashion. Let us first look at the entries of the year immediately preceding the

[5] When analysing a situation with several members of a currency union, other problems might arise. For instance, insolvency in one member country, together with the existence of mutual rescue funds like the European Stability Mechanism, might fuel self-fulfilling expectations about default of the entire union. This possibility is discussed in Corsetti *et al.* (2014).

Table 1

Budget deficits in the EU, 2009–2015

	General budget deficit, percent of GDP						
	2009	2010	2011	2012	2013	2014	2015
Austria	5.3	4.4	2.6	2.2	1.3	2.7	1.9
Belgium	5.4	4.0	4.1	4.1	2.9	3.1	2.7
Bulgaria	4.1	3.2	2.0	0.6	0.8	5.8	2.8
Croatia	5.8	5.9	7.8	5.3	5.4	5.6	4.9
Cyprus	5.5	4.8	5.7	5.8	4.9	8.9	0.7
Czech Rep.	5.5	4.4	2.7	4.0	1.3	1.9	1.9
Denmark	2.8	2.7	2.1	3.6	1.3	– 1.5	3.3
Estonia	2.2	– 0.2	– 1.2	0.3	0.1	– 0.7	– 0.2
Finland	3.5	2.6	1.0	2.1	2.5	3.3	3.2
France	7.2	6.8	5.1	4.8	4.1	3.9	3.8
Germany	3.2	4.2	1.0	0.1	0.1	– 0.3	– 0.9
Greece	15.2	11.2	10.2	8.8	12.4	3.6	4.6
Hungary	4.6	4.5	5.5	2.3	2.5	2.5	2.3
Ireland	13.8	32.3	12.5	8.0	5.7	3.9	2.2
Italy	5.3	4.2	3.5	3.0	2.9	3.0	2.6
Latvia	9.1	8.5	3.4	0.8	0.9	1.5	1.5
Lithuania	9.1	6.9	8.9	3.1	2.6	0.7	1.0
Luxemb.	0.5	0.5	– 0.5	– 0.2	– 0.7	– 1.4	0.0
Malta	3.3	3.2	2.6	3.6	2.6	2.1	1.7
Netherlands	5.4	5.0	4.3	3.9	2.4	2.4	2.1
Poland	7.3	7.5	4.9	3.7	4.0	3.3	2.8
Portugal	9.8	11.2	7.4	5.7	4.8	7.2	3.0
Romania	9.1	6.9	5.4	3.2	2.2	1.4	1.2
Slovakia	7.9	7.5	4.1	4.2	2.6	2.8	2.7
Slovenia	5.9	5.6	6.6	4.1	15.0	5.0	2.9
Spain	11.0	9.4	9.5	10.4	6.9	5.9	4.7
Sweden	0.7	0.0	0.1	0.9	1.4	1.7	1.4
UK	10.8	9.7	7.7	8.3	5.7	5.7	4.3

Source: European Commission AMECO Database. Forecast for 2015.

Table 2

Gross government debt in the EU, 2009–2015

	Gross government debt, percent of GDP						
	2009	2010	2011	2012	2013	2014	2015
Austria	79.7	82.4	82.2	81.6	80.8	84.2	86.6
Belgium	99.5	99.6	102.2	104.1	105.1	106.7	106.7
Bulgaria	13.7	15.5	15.3	17.6	18.0	27.0	31.8
Croatia	48.1	57.0	63.7	69.2	80.8	85.1	89.2
Cyprus	53.9	56.3	65.8	79.3	102.5	108.2	106.7
Czech Rep.	34.1	38.2	39.9	44.7	45.2	42.7	41.0
Denmark	40.4	42.9	46.4	45.6	45.0	45.1	40.2
Estonia	7.0	6.6	5.9	9.5	9.9	10.4	10.0
Finland	41.7	47.1	48.5	52.9	55.6	59.3	62.5
France	79.0	81.7	85.2	89.6	92.3	95.6	96.5
Germany	72.5	81.0	78.4	79.7	77.4	74.9	71.4
Greece	126.7	146.2	172.0	159.4	177.0	178.6	194.8
Hungary	78.0	80.6	80.8	78.3	76.8	76.2	75.8
Ireland	61.8	86.8	109.3	120.2	120.0	107.5	99.8
Italy	112.5	115.3	116.4	123.2	128.8	132.3	133.0
Latvia	36.6	47.5	42.8	41.4	39.1	40.6	38.3
Lithuania	29.0	36.2	37.2	39.8	38.8	40.7	42.9
Luxemb.	15.5	19.6	19.2	22.1	23.4	23.0	22.3
Malta	67.8	67.6	69.8	67.6	69.6	68.3	65.9
Netherlands	56.5	59.0	61.7	66.4	67.9	68.2	68.6
Poland	49.8	53.3	54.4	54.0	55.9	50.4	51.4
Portugal	83.6	96.2	111.4	126.2	129.0	130.2	128.2
Romania	23.2	29.9	34.2	37.4	38.0	39.9	39.4
Slovakia	36.0	40.8	43.3	51.9	54.6	53.5	52.7
Slovenia	34.5	38.2	46.4	53.7	70.8	80.8	84.2
Spain	52.7	60.1	69.5	85.4	93.7	99.3	100.8
Sweden	40.4	37.6	36.9	37.2	39.8	44.9	44.7
UK	65.7	76.6	81.8	85.3	86.2	88.2	88.3

Source: European Commission AMECO Database. Forecast for 2015.

crisis, i.e. 2009. We see that the crisis countries were similar in one respect: they had government budget deficits amounting to around 10 percent of GDP the year preceding the crisis.[6] The only other countries with deficits of a similar order of magnitude were Latvia, Lithuania, Romania and Britain – but those countries had much smaller stocks of accumulated debt (see the debt data in Table 2).[7]

As for the stock of government debt, we can see from Table 2 that Greece and Italy, with debt-to-GDP ratios in excess of 100 percent, were in a different league to the other crisis countries in 2009. Spain, Portugal and Ireland all had deficits amounting to 60–80 percent of GDP, which was high compared to most EU countries – but not dangerously high, provided they could bring down their budget deficits quickly. Obviously, when assessing the sustainability of government debt, stock and flow data for only one year is not sufficient. What really matters is also the long-term history of the country, plus the political viability of budgetary discipline. This involves a great deal of subjective assessment, and a full discussion of these factors is beyond the scope of the present paper.

In addition to the outbreak of the crisis in 2010, there is one episode that deserves more attention. That is the summer of 2012, when the ECB more explicitly claimed that it was its role to move the bond market from a bad to a good equilibrium. The next section is devoted to that episode.

The events of the summer of 2012

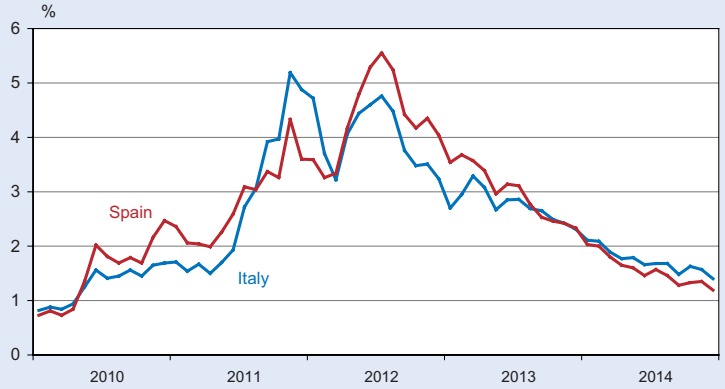
The ECB's actions in the summer of 2012 can be seen as a case where the theoretical reasoning of the previous sections was put into practice. On 26 July, ECB President Mario Draghi stated that: "the ECB is ready to do whatever it takes to preserve the euro". Immediately after that statement, the ECB launched its so-called Outright Monetary Transactions programme,

[6] One exception is Italy, which did not have a very large deficit in 2009 (5.3 percent of GDP), but which, on the other hand, had a very large debt (112.5 percent of GDP). Italy never received any bail-out loans, but benefited from ECB interventions in the bond market.

[7] In fact, Lithuania and Romania also received support loans in those years.

Figure 3

Interest spreads of 10-year government bonds for Spain and Italy against Germany, 2010–2014



Source: Eurostat.

signalling its readiness to buy massive amounts of the bonds of fragile countries.

The behaviour of the Spanish and Italian interest rates during that dramatic summer has been seen as an indication that these rates were actually expectations-driven in the sense of the multiple-equilibria model, and that the ECB managed to curb these expectations. Given the scale of Figures 1 and 2, it is difficult to see in detail how these interest rates moved. They are therefore illustrated in a separate diagram, in Figure 3.[8]

We see that both the Spanish and the Italian rates peaked in July 2012 and subsequently started to fall almost monotonically. Now, is that convincing evidence of the multiple-equilibria model?

That interest rates react to new information – in this case the ECB declaring its willingness to buy large amounts of bonds in 2012 – is hardly surprising. Such price movements are not by themselves proof that there are multiple equilibria around. Even with a unique equilibrium that is solely determined by fundamentals, the announcement of a new policy by a major player can, of course, affect that equilibrium. Nevertheless, many writers have regarded the behaviour of the Spanish and Italian rates during the summer of 2012 as evidence in favour of the multiple-equilibria model.[9]

[8] Véron (2015) has a detailed high-frequency data diagram of Spanish and Italian interest rates, with a vertical line at 26 July 2012 (the date of Draghi's 'whatever it takes' speech). That diagram gives a more vivid, day-to-day picture of the events.

[9] See, for example, Corsetti (2015); De Grauwe (2015); Véron (2015). By contrast, Mendoza (2014) points out that the events may have nothing to do with multiple equilibria, but may instead have been driven by fundamentals.

As we see from Table 1, Spain had a long history of large budget deficits up to 2012, with no tendency for the deficits to decrease. That Spanish interest rates rose in 2011 and 2012 is therefore not a particularly convincing example of a solvent, but illiquid, country suffering from a 'bad equilibrium'. The same seems to hold for Italy. Table 2 shows that Italy started out with a very high stock of government debt, and although the deficits were only moderate (around 3–5 percent of GDP according to Table 1), there was no tendency towards any budget surpluses, and thus no tendency towards any drop in Italy's debt. In fact, Italy's sovereign debt increased from 112.5 to 123.2 percent of GDP during the period up to Mr Draghi's speech in the summer of 2012.

Admittedly, the fall in Spanish and Italian interest rates in late 2012 may be attributed to the launching of the ECB's Outright Monetary Transactions (OMT) programme. As pointed out above, this is not surprising; one does not need any model of multiple equilibria to understand that a big player buying virtually unlimited amounts of sovereign bonds will drive down their interest rates. But it seems unconvincing to attribute the rise in those interest rates *prior to* Draghi's speech to the result of multiple equilibria playing their sinister game. The development of Spanish and Italian finances during the period 2009 to 2012 (Tables 1 and 2), does not paint a picture of basically solvent countries that for some inexplicable reason are suffering from temporary illiquidity.

But maybe the ECB, in the summer of 2012, had access to information relevant for forecasting the *future* development of Italian and Spanish public finances – information that private investors lacked? If that was the case, the information cannot have been very accurate. Looking at the development of Spanish and Italian public finances for the period 2012–2015 (Tables 1 and 2), we see that their budget deficits never turn into surpluses, and that their debt-to-GDP ratios continue to increase monotonically. Spanish debt increased to 100.8 percent of GDP in 2015, while Italian debt increased to 133.0 percent. These are not the sort of debt levels that we would associate with basically solvent countries, suffering from a temporary bout of

illiquidity in 2012. While many Eurozone countries have improved their debt situations, either thanks to higher GDP growth or because of a budget surplus, Italy and Spain do not belong to that group.[10]

Quite independently of the multiple-equilibria reasoning, there is another rationale for intervention. If a country is hit by an asymmetric shock, and that shock is so large that the individual country finds it difficult to handle, there is a case for risk-sharing among countries. This risk-sharing can take the form of either bail-out loans, administered by the EU funds, or by the ECB driving down the interest rate on the country's bonds. And this holds true regardless of whether the shock makes a basically solvent country insolvent (like in the multiple-equilibria model), or is merely costly, without completely wrecking public finances.

This argument is different from the lender-of-last-resort argument discussed earlier. In fact, it is an argument about insurance, and often lies behind calls for a 'fiscal union' raised in the aftermath of the Greek crisis. But even if the fiscal union is no longer on the political agenda, insurance in various forms is. To put this issue into perspective, it will be discussed in a separate section.

The insurance argument

The advantage of insurance is risk-sharing. But there is also a disadvantage: moral hazard. Normally, there is a trade-off between the two. If it is possible to design an insurance contract striking such a trade-off between risk sharing and moral hazard that the advantages dominate, then insurance is warranted. Otherwise it is not.[11]

The Maastricht Treaty of 1992 took a clear stand on this issue: no insurance is warranted. In fact, fiscal-union arrangements in the form of loans, transfers and central-bank actions like the OMT were not permitted, according to Articles 123 and 125. Is there any new information available today that could lead us to conclusion that differs from that of the Maastricht Treaty? In other words, have recent events demonstrated that moral hazard is less of a problem than the architects of the Treaty thought 24 years ago?

The Greek debt crisis in 2010 was mainly self-inflicted, and thus constituted an example of moral hazard.[12] Although it is hard to dismiss the multiple equilibria-argument empirically, such an argument seems less reasonable for Greece than the alternative view, namely that of an equilibrium driven by fundamentals. In fact, most economists today recognise that Greece was not merely illiquid, but rather insolvent, in 2010.[13] And that insolvency was self-inflicted.

As for the other crisis countries, things are more complicated. One may argue that the interest hikes on Spanish, Portuguese and Irish government bonds during 2010 and 2011 (Figure 2) could have been 'contagion' from Greece, and therefore not the result of moral hazard.

These facts call for a more thorough discussion of moral hazard. One might say that the large budget deficits of Ireland and Spain were not self-inflicted. Instead, they were exogenous, resulting from attempts by those countries to rescue their banks. These banks had run into serious trouble because of housing bubbles that burst during the international recession of 2008–2009 – and that recession was certainly exogenous to Ireland and Spain.

But such reasoning defies the background to those particular banking crises, namely the failure of national banking supervision authorities to prevent reckless lending to the real estate sector. With more prudent supervision, the Irish and Spanish banking crises would have been much milder, and would not have wrecked the public finances of these two countries. Now, it is always easy to say *ex post* what a government should have done. I do not want to moralize over the actions (or non-actions) of the Irish and Spanish governments,[14] but I do want to point out that the view of the banking crises as exogenous shocks to the Irish and Spanish public finances can be questioned. Incidentally, this also holds for some of the

[10] Incidentally, France and Portugal – countries that are also sometimes referred to as examples of the multiple-equilibria model at work – also show a deteriorated financial situation. However, for Portugal, the trend might have been reversed in 2015.

[11] Needless to say, the benefits of insurance and the problems of moral hazard are not limited to countries that are members of a currency union. Even non-union countries might be in need of insurance – but since countries in a currency union have a closer cooperation, and the individual union members have abstained from their own monetary policy, the notion of risk-sharing seems more natural in such cases.

[12] Here we disregard the rather subtle philosophical question of whether the actions of a corrupt and incompetent government are beyond the control of the voters in a democracy, and thus of whether the voters should be insured against such a government.

[13] This is the view of, for instance, most of the contributions to the Baldwin and Giavazzi (2015) volume.

[14] Strictly speaking, bank supervision in Spain and Ireland was the task not of the government, but of the Banca de España and the Bank of Ireland.

smaller crisis countries not discussed here such as Cyprus, for example.

When looking at the figures in Tables 1 and 2, and considering the background actions and non-actions of the governments in question, it is hard to see that moral hazard can be altogether dismissed as an explanation. Thus the question is whether new information in favour of insurance really has been forthcoming. Such information should show that the fear of moral hazard among the architects of the Maastricht Treaty was unfounded. I find it hard to see that this is the case. The policy conclusion of the Maastricht Treaty, namely that no insurance is warranted, has therefore not been obviously proven wrong by the events of 2010–2015. It is worth noting, however, that it has not been proven right, either. Those who want to maintain the Maastricht view can claim that all interest hikes in the crisis countries in the period 2010–2015 are the result of moral hazard. On the other hand, those who want to discard the 'no-bailout principle' can claim that the crisis countries (except Greece) were simply illiquid, that they were innocently hit by real-estate bubbles and banking crises, and that no moral hazard has been at work.

The matter is thus complicated and can probably not be definitely resolved. Discussing the evidence over and over again is, however, necessary – if for no other reason than that the discussion will make us intellectually more prepared when the next crisis erupts. If we are better prepared than we were in 2010, we will probably be better at handling the skillful lobby groups that try to sway policy decision-making in their favour.

Concluding comments

I would like to end with some reflections on the new role assumed by the ECB when it launched the OMT in the summer of 2012. By taking the stand that Italy and Spain were solvent but illiquid, the ECB took a great risk. The budget situation of these countries does not seem to have improved after the OMT. It may therefore turn out that the ECB has wasted money on failing countries, instead of just helping illiquid ones to overcome a temporary problem.[15]

[15] Every year, the ECB pays a dividend to the treasuries of Eurozone countries. That dividend basically comes from seignorage, and capital losses on bonds reduce the amount the ECB can pay in dividends. Thus, such capital losses are ultimately borne by the tax payers of the Eurozone countries.

By launching the OMT programme, the ECB also opened up its doors to other countries asking for help and claiming that they are not insolvent either – or at least not more insolvent than Spain and Italy. This may prove a source of conflict within the Eurozone in coming years, especially if the debt situation does not improve. A particularly interesting case is that of France, which is not only an important country in its own right, but also a country that is rapidly approaching an indebtedness level of 100 percent (Table 2).

One may guess that the ECB is following the development of Spain and Italy, as well as of France and Portugal, with great interest. A recovery may improve the debt/GDP ratio – but a recovery will also create demand for government spending on social services that have been neglected during the years of austerity. A spell of inflation may help to reduce the real value of the debt, and we can guess that the ECB will not be too eager to curb future inflation in the Eurozone. An inflation rate slightly above the target of two percent will reduce the risk of a major embarrassment to an ECB that has claimed that it is able to distinguish between insolvency and illiquidity.

This issue becomes even more intriguing when one looks at the debt/GDP ratio of the entire Eurozone – see Table 3. During the last decade, indebtedness has increased almost monotonically from 67.3 to 92.1 percent of GDP. And this in an area where, according to both the Maastricht Treaty of 1992 and the Growth and Stability Pact of 1997, the critical level for sustainability is 60 percent – a level that not even Germany has been able to adhere to.

The prestige invested by the ECB in its ability to distinguish between insolvency and illiquidity, and the

Table 3

Gross government debt in the entire Eurozone (19 countries), 2006–2015

Year	Debt (% of GDP)
2006	67.3
2007	64.9
2008	68.5
2009	78.3
2010	84.0
2011	86.7
2012	91.3
2013	93.4
2014	94.5
2015	94.0

Source: European Commission AMECO Database, Forecast for 2015.

difficulties encountered by the Eurozone countries in keeping debt at sustainable levels, might have implications for the level of inflation rates expected by the financial markets over the next decade. Thus complicated mechanisms of inflation and default, of the kind discussed above, may be set in motion, and we may witness higher nominal interest rates in the years to come – accommodated or not accommodated by the ECB allowing higher inflation.

However, let me end on a positive note. Everything does not look totally gloomy. Firstly, it is not all that surprising that indebtedness has increased since 2006. The last decade has not been a normal period, but a period of repeated crises and prolonged recession. Once we return to more normal times, we may witness higher GDP growth rates and improved public finances. This does not, however, mean that all individual countries will be out of danger. The fact that so many countries had failed to build up reserves during the good years, and thus were so vulnerable when the crises started, is a bad sign.

Secondly, many of the Eurozone countries have not only witnessed austerity and contraction, but also structural reform. This holds for Greece, Spain, Portugal, Ireland and Italy and may lead to higher growth rates in the future. The lack of reform in France is nevertheless problematic – the question is whether just a 'normal' business-cycle recovery will be enough to reduce French public debt as a percentage of GDP.

References

Baldwin, R. and F. Giavazzi (eds., 2015), *The Eurozone Crisis – A Consensus View of the Causes and a Few Possible Solutions,* London: CEPR Press.

Bénassy-Quéré, A. (2015), "Maastricht Flaws and Remedies", in: Baldwin R. and F. Giavazzi (eds.), *The Eurozone Crisis – A Consensus View of the Causes and a Few Possible Solutions,* London: CEPR Press, 72–84.

Calvo, G. (1988), "Servicing the Public Debt: The Role of Expectations", *American Economic Review* 78, 647–661.

Cole, H.L. and T. Kehoe (2000), "Self-Fulfilling Debt Crises", *Review of Economic Studies* 67, 91–116.

Corsetti, G. (2015), "Roots of the Eurozone Crisis: Incomplete Development and Imperfect Credibility of Institutions", in: Baldwin R. and F. Giavazzi (eds.), *The Eurozone Crisis – A Consensus View of the Causes and a Few Possible Solutions,* London: CEPR Press, 85–98.

Corsetti, G. and L. Dedola (2013), *The Mystery of the Printing Press – Monetary Policy and Self-fulfilling Debt Crises,* CEPR Discussion Paper 9358.

Corsetti, G. *et al.* (2014), "Sovereign Risk and Belief-driven Fluctuations in the Euro Area", *Journal of Monetary Economics* 61, 53–73.

De Grauwe, P. (2015), "Design Failures of the Eurozone", in: Baldwin R. and F. Giavazzi (eds.), *The Eurozone Crisis – A Consensus View of the Causes and a Few Possible Solutions,* London: CEPR Press, 99–108.

Mendoza, E. G. (2014), "Coments on: 'Soveriegn Risk and Belief-driven Fluctuations in the Euro Area' by Corsetti, Kuester, Meier and Müller", *Journal of Monetary Economics* 61, 74–77.

Persson, M. and C.-H. Siven (2006), "Incentive and Incarceration Effects in a General Equilibrium Model of Crime", *Journal of Economic Behavior & Organization* 59, 214–229.

Sinn, H.-W. (2015), *The Greek Tragedy, CESifo Forum* 16 (Special Issue).

Véron, N. (2015), *Europe's Radical Banking Union,* Bruegel Essay and Lecture Series, http://bruegel.org/wp-content/uploads/imported/publications/essay_NV_CMU.pdf.

National Debt Policies in Europe after the Crisis

Stefan Josten,
Florian Bartholomae and
Alina Schoenberg*

Introduction

The European fiscal crisis that started in Greece in 2010 has made the governance problems of the Eurozone staggeringly evident. One of the fundamental roots of these problems is an unusual asymmetry built into the institutional design of the European Monetary Union (EMU): while monetary policy is centralised and conducted by a common European Central Bank (ECB), budgetary policies are left to the individual nation states. The origin of this asymmetry can only be understood in a wider political context: on the one hand, out of a – historically quite understandable – fear of the increasing political weight and power of the freshly unified Germany, EMU in the beginning 1990s was intended to contain German economic dominance in Europe by replacing the D-Mark with a common European currency. On the other hand, however, European policy-makers (and citizens) at that time shied away from completing the process of European integration by establishing a political union ('United States of Europe') as well. As a result, the incomplete EMU poses not only the question of how national debt policies should be conducted. But more fundamentally, one also has to ask: are decentral fiscal policies, in the long run, consistent with a centralised monetary policy?

Given the institutional asymmetry described above, national debt policies in the EMU are faced with a delicate balancing act between two conflicting concerns: on the one hand, national governments, having abandoned monetary autonomy, are left only with the instruments of budgetary policy to deal with country-specific shocks and other short-term economic calamities that the ECB will not take care of. In such an environment, the standard economic targets-and-instruments framework suggests that national debt policies should be as flexible and autonomous as possible in the short run. On the other hand, the unsound public finances of member states make themselves for potential sources of economic disturbances, hindering the proper implementation of European monetary policy and jeopardizing the objectives of adequate growth, full employment and price stability; according to this line of reasoning, it is of prime importance to effectively constrain national debt policies in line with long-run requirements of fiscal discipline. This trade-off between short-term flexibility and the long-term constraints of national debt policies is one key issue in the design of the future European governance structure in the area of public finance.

* Bundeswehr University Munich.

National debt policies in the short run: stability concerns

As emphasised by the theory of optimum currency areas (Mundell 1961; McKinnon 1963), the single most important cost of monetary unification is the abandonment of the nominal exchange rate as a policy instrument of international adjustment. The magnitude of this cost is determined by the nature of the macroeconomic shocks the common currency area is hit by: with respect to symmetric shocks the loss of the exchange-rate policy instrument can be more easily absorbed (although even in such cases the problem arises that the outside exchange rate is not determined efficiently). But when countries are hit by asymmetric shocks, i.e. changes in the exogenous set of economic data that hit different member countries each in a significantly different way, these shocks, by their very nature, cannot be neutralized by a common monetary policy, nor can member countries any longer use the exchange rate to correct for differential economic developments; this is the core macroeconomic problem of monetary unions (see e.g. Cohen and Wyplosz 1989).

It is true that, even in such events, decentral fiscal policy by national budgets would not be necessary if the adjustment of region-specific shocks occurred mainly

through the migration of workers, real-wage flexibility, or a system of federal taxes and budgetary transfers that automatically shifts resources from member-states where output expands towards jurisdictions suffering negative region-specific shocks.[1] However, with serious real-wage rigidities, limited intra-European labour mobility and a small-scale EU transfer-system geared towards structural differences, not stabilisation objectives, there does not appear to be scope in the Eurozone for sufficient adjustment on either margin. As a result, member states in Euroland are left only with the policy instruments of national budgets to deal with asymmetric temporary demand shocks and other short-run economic disturbances. Accordingly, when a member country is hit by a recession, it should at least enjoy the freedom to let its deficit increase through the automatic stabilisers built into its national budget. Under special circumstances like, for example, an unusually severe recession, member states should also be able to finance discretionary spending increases or tax reductions by issuing government debt.

National debt policies in the long run: fiscal discipline

In the long run, national debt policy is restricted by the government's intertemporal budget constraint. The government is solvent as long as the present value of its expected terminal net liabilities is zero (see Buiter 1985). If public sector debt is not eventually to be monetized, this implies that the present value of future taxes must be equal to the present value of future government spending plus the value of already outstanding government debt; thus, at any point in time, when the government has positive outstanding debt, it must anticipate running primary surpluses at some point in the future.

Forsaking monetary independence in a monetary union tightens the government budget constraint of Eurozone member states by limiting the availability of seigniorage revenues. Integration of goods and factor markets in the EU restricts the range of feasible national fiscal policies even further: a government's ability to borrow today is limited by its ability to tax tomorrow. And with capital and labour freely mobile within the economic union, any government's ability to tax tomorrow is, in turn, severely limited since an increasing tax burden may induce mobile factors of production to flee to lower-tax jurisdictions, eroding the tax base. Furthermore, as the recent European fiscal crisis has convincingly demonstrated, the issue of fiscal discipline takes on a new dramatic dimension in an incomplete monetary union like EMU. Without budgetary union, national governments in EMU are forced to issue debt in euros – a currency they do not control. But issuing debt in a currency they have no control over effectively transforms the long-run inter-temporal budget constraints of national governments into liquidity constraints that national governments have to face in the short or even very short run. These liquidity constraints make national governments quite dependent upon capital market investors and their expectations, which are not only irrationally shifting sometimes, but also tend to be self-fulfilling in nature. Consequently, national debt policies in a monetary union come with the risk that national governments are forced to default on their debt by self-fulfilling capital market expectations (see De Grauwe 2012).

Accordingly, with respect to national debt policies in the long run, the central challenge for the EMU is to find a practical arrangement that constrains national budgetary policies in line with the requirement of *fiscal discipline* – defined as sound and sustainable budgetary positions – so as to avoid acute liquidity crises in the sovereign debt market, as well as pressures for monetary accommodation by the ECB or bailout by other EU member states. Unfavourably, however, fiscal discipline is particularly precarious in Euroland because an incomplete monetary union strengthens existing incentives – of both an economic and politico-economic nature– for excessive national deficits.

Incentives for excessive deficits in a monetary union

The creation of a monetary union allows individual countries to shift an increasing share of their deficit financing costs to partner countries. Such negative pecuniary externalities of public debt are conceivable in various forms: in the first place, the creation of the EMU has enhanced intra-EU capital mobility, thereby reinforcing adverse spill-over effects associated with expansionary budget policies. A second line of reasoning focuses on moral hazard in a monetary union: individual member countries may be tempted to raise public debt beyond levels considered sustainable because they can expect the Union to come to their rescue, should a debt crisis emerge. Thirdly and finally, a certain degree of free-riding by the EMU member

[1] In 1957, Scitocsky already listed not only 'an all-European integrated capital market' but also 'an all-European integrated employment policy' as 'necessary conditions of currency union'.

countries[2] can be expected since political responsibility for price stability lies solely with the ECB as the only federal authority of economic policy, even if, de facto, the dangers to price stability are caused by unsound public finances.

The changes described in economic incentives through a monetary union might work hand-in-hand with already existing *political* distortions that give rise to a deficit bias and produce budgetary policies that are excessively expansionary from the standpoint of both inter-temporal efficiency and intergenerational equity. In particular, a monetary union tends to reduce the cost of borrowing as perceived by the government in power for two reasons: firstly, growing financial integration allows governments to borrow substantial amounts without having to face sharply rising interest rates; secondly, fixed nominal exchange rates among members of a monetary union remove the highly visible sanction of exchange-rate depreciation.

Disciplinary forces of international capital markets

If international capital markets worked efficiently, market forces in EMU could be expected to enhance fiscal discipline. As a member country's debt-to-GDP ratio rises, so should the required rate of return on public obligations, thus deterring from excessive borrowing. If they fail to heed the rise in interest rates, governments should find themselves rationed out of the market. If investors are able to distinguish good from bad credit risks, consequences should, furthermore, be limited to the member country running excessive deficits. Thus, if the capital markets worked efficiently, there would be no spill-overs, providing no motivation for a central bank bailout and no inflationary threat. That is: *if.* Practical experience with capital market assessments of default risks on the government bonds of countries during the recent debt crisis in Europe casts serious doubts on the idea of efficient markets. As a matter of fact, the markets did not seem to perceive any sign of excessive borrowing from countries like Greece, Ireland, Portugal, or Italy for a very long time. Until the year 2010, when suddenly and in a matter of weeks or even days, they started to attach huge risk premiums to the government bonds of the aforementioned countries, thereby transforming the long-run problem of government solvency in these countries into an acute liquidity crisis with strong self-fulfilling tendencies. As a bottom line, national fiscal policies cannot be expected to be adequately disciplined by international capital markets.

This leaves us, finally, with formal political rules on government budget deficits, such as Article 104c of the Maastricht Treaty, the Stability and Growth Pact and the European Fiscal Compact, that try to secure fiscal discipline by explicit budget rules and politically-imposed sanctions.

Disciplinary forces of explicit budget rules

In general, empirical evidence about existing rules on government budget deficits suggests that it is very difficult to enforce them (see von Hagen 1991). Furthermore, off-budgeting techniques, 'creative accounting' or even outright misreporting of budget numbers (e.g. in the case of Greece) were commonly used by EU member countries in the transition to monetary union as well as afterwards. Accordingly, the disciplinary force of the excessive deficit procedure laid down in Article 104c of the Maastricht Treaty appeared questionable from the start. After the launch of the EMU, the Treaty's original excessive deficit procedure has been put in more concrete terms by the so-called Stability and Growth Pact finally agreed upon at the 1997 summit of the European Council in Amsterdam. To date the Pact has been applied in a remarkably inconsistent manner. Furthermore, with its two reforms, it has been subjected to seesaw changes: in 2005, its rules were watered down under the pressure of Germany and France; while in 2011, following the 2010 European sovereign debt crisis, the EU member states adopted a new reform – now aimed at tightening the rules again.

In direct comparison, the most recent reform of the Stability and Growth Pact clearly strengthens the disciplinary force of the excessive deficit procedure: the procedure itself has been tightened and made more concrete, the sanctioning procedure has been made more automatic by a change in the voting procedure (switch to 'reverse majority voting') restricting the scope for strategic considerations in political decision-making processes, the Commission's power to obtain information from national governments has been increased and misreporting on deficits and debt can be penalized with a fine in the future.

European budget rules: an overall assessment

So far, we have discussed only the disciplinary effect of existing European budget rules. For an overall as-

[2] An extensive discussion of the associated risks of free-riding in the EMU can be found in Uhlig (2003).

sessment, however, one also has to keep in mind that the quest for fiscal discipline in the long run has to be balanced against the need for the flexibility of national debt policies in the short run. How do the existing European budget rules and procedures handle this delicate trade-off?

Quite obviously, the European fiscal rules and procedures are far more concerned about the long-run risks associated with national deficits and debt than about the opportunities associated with them in the short run. As a result, they end up being rather unbalanced and tend to focus on the long-run sustainability of national debt at the expense of the short-run flexibility of national budgetary policies. In doing so, the existing European rules and procedures on deficits and debt raise – at least – three major issues. Firstly, these provisions accept the risk that national budgets cannot adequately fulfil their roles as automatic stabilizers when member states are hit by asymmetric shocks, thereby potentially intensifying economic downturns. Secondly, the rigidity of existing European budgetary rules and sanctions also creates serious credibility issues with respect to its long-term sustainability goal. We have already seen in the (short) past of EMU (e.g. in 2002-2003 and again in the wake of the global financial crisis that started in 2008) that when their economies are hit by a recession, national governments are unwilling to subject their economies to deflationary policies and simply do not adhere to the Pact. As a result, the long-run provisions, while overly restrictive on paper on the one hand, have already lost most of their credibility – with the danger of turning the Pact, for all practical purposes, into a dead letter. Thirdly, as has been made very clear – again – in the course of the recent sovereign debt crisis, in times of economic calamities, the lack of balance between short- and long-term requirements for national debt policies in EMU also creates serious tensions between national governments and people, on the one hand, and European institutions, on the other hand. Among other things, it increases the pressure on both the ECB and the governments of other member states: on the former to loosen its monetary policy and bring about investment- and growth-enhancing interest rate, as well as to allow for explicit or implicit forms of monetary public debt financing; on the latter for higher transfer payments either to implicitly bail out the member states that are in financial distress or to soften the social consequences for their respective citizens.

All in all, therefore, in a paradoxical way, the lack of national debt-policy flexibility in the short run also magnifies the risk that the long-term goal of sound and sustainable public finances is missed.

European fiscal governance in the future

The current asymmetry of decentral fiscal policies pursued in a framework of centralised monetary policy, and not credible statutory restraints, is not a stable institutional arrangement. When hit by large asymmetric economic shocks, member states face serious adjustment problems and national governments push for transfer payments from the EU budget and/or other member states either to be implicitly bailed out of financial distress or to soften the social consequences of necessary adjustments.

What would an institutional arrangement that will alleviate these calamities look like? The straightforward solution from the viewpoint of macroeconomic stability would be the creation of a federal-type fiscal authority by centralising a substantial part of the national budgets at the EU level. This common union budget would serve two economic functions (see De Grauwe 2012): insurance against asymmetric shocks and protection from acute liquidity crises and forced defaults on sovereign debts.

Firstly, as the theory of optimum currency areas has pointed out, a system of federal taxes and budgetary transfers automatically shifts resources from member-states where output expands towards jurisdictions suffering negative region-specific shocks, thus smoothing consumption within each national economy and having a stabilising effect over time. This idea also played a major part in the 1977 MacDougall Report on the role of public finances in European integration, which concluded that EMU would not be viable without a sufficiently large community budget available for fiscal stabilisation policies. It has even been argued that monetary union would not survive in the absence of transfers to cushion shocks, since severe shocks would lead to defections (Sala-i-Martin and Sachs 1992).

Secondly, as outlined above, national debt policies in a monetary union come with the risk that national governments are forced to default on their debt by self-fulfilling capital market expectations. This risk can be eliminated by consolidating national debts into one common debt at the European level, i.e. by moving to

a budgetary union. The prospective EU government would issue debt in a currency over which it has full control and, accordingly, could not be confronted with the sort of liquidity crises several EU member states had to manage recently.

Of course, having a budgetary union together with a monetary union amounts to a European political superstructure, which is just short of a fully-fledged political union, making a giant leap towards a 'United States of Europe'.[3] So, finally, our discussion has come full circle: the issue of national debt policies in the EMU can only be resolved in a wider political context. The people of Europe and policy-makers have to make the fundamental decision they have been shying away from for over two decades: do we want a political union in Europe? If the answer is affirmative, then the move from an incomplete monetary union to a political union will also alleviate Eurozone governance problems with respect to national debt policies and macroeconomic stability.[4] If, on the other hand, the nation states that make up the EU and their respective citizens are not willing to transfer substantial parts of their national sovereignty (taxation and spending, in particular) to a European parliament and government, then it would, quite frankly, be only logical to unwind the monetary union as well. If EMU is to be continued in its present basic institutional set-up, there are some 'second-best' policy options (like Eurobonds, for instance, or improved coordination of macro-policies, etc.) that may fulfil at least some functions of a fully-fledged budgetary union. But the fiscal governance problems that come with the institutional asymmetry of an incomplete monetary union will continue to haunt the European Union and the most recent sovereign-debt crisis will almost certainly not be the last one.

References

Buiter, W. (1985), "A Guide to Public Sector Debt and Deficits", *Economic Policy* 1, 13–79.

Cohen, D. and C. Wyplosz (1989), "The European Monetary Union: An Agnostic Evaluation", in: Bryant, R.C., D.A. Currie, J.A. Frenkel, P.R. Masson and R. Portes (eds.), *Macroeconomic Policies in an Interdependent World,* Washington DC: The Brookings Institution, 311–337.

De Grauwe, P. (2006), *On Monetary and Political Union,* Leuven, University of Leuven.

De Grauwe, P. (2012), "The Governance of a Fragile Eurozone", *Australian Economic Review* 45, 255–268.

Feldstein, M. (1997), "EMU and International Conflict", *Foreign Affairs* 76(6), 60–73.

MacDougall, D. *et al.* (1977), *Report of the Study Group on the Role of Public Finance in European Integration,* Economic and Financial Series, Luxembourg, Commission of the European Communities.

McKinnon, R.I. (1963), "Optimum Currency Areas", *American Economic Review* 53, 717–725.

Mundell, R. (1961), "A Theory of Optimum Currency Areas", *American Economic Review* 51, 657-665.

Sala-i-Martin, X. and J.D. Sachs (1992), "Fiscal Federalism and Optimum Currency Areas: Evidence for Europe from the United States", in: Canzoneri, M.B., V. Grilli and P.R. Masson (eds.), *Establishing a Central Bank: Issues in Europe and Lessons from the US,* Cambridge: Cambridge University Press, 195–220.

Scitovsky, T. (1957), "The Theory of the Balance of Payments and the Problem of a Common European Currency", *Kyklos* 10, 18–44.

Uhlig, H. (2003), "One Money, But Many Fiscal Policies in Europe: What Are the Consequences?", in: Buti, M. (ed.), *Monetary and Fiscal Policies in EMU: Interactions and Coordination,* Cambridge, New York and Melbourne: Cambridge University Press, 29–56.

von Hagen, J. (1991), "A Note on the Empirical Effectiveness of Formal Fiscal Restraints", *Journal of Public Economics* 44, 199–210.

[3] Actually, US economists have seen the EMU as intermediate step to a political union. As Feldstein (1997, 60) points out: "while the individual governments and key political figures differ in their reasons for wanting a political union, there is no doubt that the real rationale for EMU is political and not economic".

[4] According to De Grauwe (2006), the EMU will stay a fragile regime as long as there is no political union. He bases his argument on three major issues: firstly, several important macroeconomic instruments have already been transferred to European institutions; secondly, there is no system of redistribution in Euroland that could help to deal with asymmetric negative shocks; and thirdly, since large parts of economic policy are still handled bay national governments, the risk of creating asymmetric shocks endangering stability prevails.

China's Market Economy Status and European Anti-Dumping Regulation

Alexander Sandkamp and
Erdal Yalcin*

Introduction

In international trade importing countries can be confronted with foreign firms that charge export prices which are below the exporters' production costs or prevailing market prices. This sort of price manipulation is referred to as price dumping and represents unfair competition behaviour by foreign firms. The reasons for 'price dumping' range from reducing excess capacity in the exporting country to the intended harming of competing firms in the importing country.

To prevent this sort of unfair competition, the European Commission can impose anti-dumping (AD) duties on foreign exporters. AD duties thus belong to the set of temporary trade protection instruments that can be used to restore fair competition between foreign and national firms by eliminating unfair price differences. Each country or association of states such as the European Union (EU) formulates its own AD regulation. However, the World Trade Organisation (WTO) defines general guidelines on the implementation of AD duties – including ways to calculate dumping margins and thus the level of punitive tariffs – which member states have to comply with.

Several factors play a role when it comes to determining the dumping margin. One decisive legal element is whether the dumping exporter's country is granted Market Economy Status (MES). All exporting countries that have received MES can be treated differently in the determination of dumping margins than countries with a so-called Non-Market Economy Status (NMES). Interestingly, MES is legally relevant only in AD proceedings. The term is used to classify countries and hence allocates respective countries to different AD regulations. In this sense, MES represents more of a technical term with the real economic system of respective countries playing a minor role. It has to be emphasized that a country can be granted MES even when it does not operate a market-based economic system, as long as relevant economic conditions are satisfied.

The EU – together with several other WTO members including the United States – treats China as a Non-Market Economy (NME). This classification is essential in the EU's anti-dumping procedure as it determines the circumstances under which AD measures are allowed and how dumping margins are calculated. The legal foundation for this can be found in Article 15 of China's Accession Protocol to the WTO, which came into effect in 2001. It allows WTO members to determine by themselves whether they grant China MES; and subsequently which methodology to apply to calculate dumping margins. In December 2016, Paragraph (a) (ii) of Article 15 in China's Accession Protocol to the WTO is about to expire. As this paragraph is crucial to legitimize the implementation of specific AD proceedings against China, a controversial debate among different stakeholders has emerged.[1]

This article provides an overview of possible courses of action for the EU and potential consequences for the European economy. Beyond first order effects on output and employment, these include wider implications both for the EU's relations with China, as well as with other countries, particularly the United States.

Market Economy Status and its significance in AD proceedings

The WTO defines dumping as selling a product at a price below its normal value. This means the price is either 'less than the comparable price in the ordinary

* Ifo Institute.

[1] For a broader overview of this topic, readers are referred to a study conducted by the Ifo Institute on behalf of the European Parliament – *New Trade Rules for China? Opportunities and Threats for the EU.*

course of trade' or, in the absence of comparable domestic prices, 'less than the cost of production of the product in the country of origin plus a reasonable addition for selling cost and profit' (GATT 1947; WTO 1994).

In cases where dumping is detected, the importing country is allowed to set an AD duty, which may not exceed the difference between the normal price and the dumped price (dumping margin). This procedure is also followed by the EU. In addition to the fact that a foreign producer's export prices are too low, dumping also has to harm the EU firms in question either through their loss of market share in their domestic market, or by forcing them to make staff cutbacks. Moreover, AD measures should not be against the broader interests of the EU and the possible negative consequences of AD duties must be included in the decision-making process.

When imposing AD duties, the EU follows the WTO's recommendation and applies the 'lesser duty' rule, which means that the AD duty is equal to either the dumping margin (normal value less import price) or the injury margin (EU producer's price less import price), whichever is lower (European Union 2009). For firms located in countries classified as market economies, the producers' export prices in the importing country (e.g. the EU) are compared to their domestic costs or domestic market prices (e.g. China). In the case of imports from countries with a NMES, it is argued that the state influences price formation. Therefore, *normal value* is determined on the basis of prices and costs in a third – also referred to as '*analogue*'– country. This constructed value is then compared to the average export prices of the specific sector in the exporting country. The analogue country needs to have MES.

There are also AD regulations in the EU for intermediate cases that fall between the two procedures outlined above. Companies within a NME can qualify for so-called *Market Economy Treatment* (MET) if they can verify that they are acting in a market economy environment. In cases where this is not possible, respective companies can still apply for a so-called *Individual Treatment* (IT) if certain criteria are fulfilled. These include – among other things – the free, market based, determination of export prices. Should a company qualify for individual treatment, the normal value is still obtained by using prices and costs in an analogue country. However, the export price is computed with the exporting producer's own data, rather than with aggregate data from the exporting country.

Finally, EU legislation makes it possible to give special treatment to certain producers within market economy countries. For this purpose, adjustments to normal values in specific industries are made in the way that producers in this sector are still subject to Non-Market Economy Treatment – NMET (Detlof and Fridh 2006; Puccio 2015). This concept was introduced when the EU granted Russia the MES in 2002 to ensure that appropriate punitive tariffs could still be imposed on specific Russian industries that remained strongly dominated by state-owned enterprises. The various calculation methods of dumping margins described above are summarised in Table 1.

Article 15 of China's Accession Protocol to the WTO states that China can receive non-market economy status within the member countries' AD regulations. It is only possible to use domestic prices or costs to determine normal values if a Chinese producer proves that product prices are set by the market. If compa-

Table 1

Overview of EU dumping calculation methods

	Country category	Company treatment	Constructed normal value (reference price)	Export price (used to calculate dumping margin)
1	MES	MET	Domestic prices / costs	Exporter's own price
2	MES	Adjusted normal value	Costs of other domestic producers / information from representative markets	Exporter's own price
3	NMES	MET	Domestic prices / costs	Exporter's own price
4	NMES	IT	Analogue country prices	Exporter's own price
5	NMES	NMET	Analogue country prices	Average export prices of exporting

Note: The choice of a reference price ('normal value') used for determining the dumping margin of exporters critically depends on the market economy status of the exporter. For exporters in market economies, domestic prices and costs are used. For exporters in non-market economies, prices in a third (analogue) country are used.

Source: Ifo Institute; European Union (2002 and 2009).

nies are not able to provide sufficient evidence, the importing WTO member does not have to use the exporter's domestic prices to calculate normal values. Instead, an '*alternative methodology*' may be used which, however, is not specified by the GATT or the Accession Protocol. As a result, the EU follows its own methodology that is consistent with WTO criteria as outlined above.

Anti-dumping legislation around the world

According to the definition by the UNCTAD (United Nations Conference on Trade and Development), a market economy relies heavily upon market forces to determine levels of production, consumption, investment and savings without government intervention. However, the decision over China's Market Economy Status and hence its treatment in AD cases depends mainly on national law.

A comparison of AD legislation between China's major trading partners (including the United States, Argentina, Australia and Brazil) conducted by the Ifo Institute illustrates a large overlap of defined criteria that need to be fulfilled by a country to receive MES. In their assessment all countries account for the price formation process, while non-market economy conditions are considered to be reflected in an unbalanced interaction between demand and supply. In addition, all considered countries account for the degree of state interference such as input choice, as well as the convertibility of the currency (except Malaysia and Australia). Malaysia, Brazil, Argentina and Australia have currently granted China market economy status. Overall, out of the 32 WTO members that have initiated AD proceedings against China, 14 have granted it market economy status. Nevertheless, granting MES to China does not necessarily change the AD treatment of a country (as can be seen in the case of Argentina or Brazil).

Anti-dumping in the EU and the United States – key differences

Comparing the EU and the United States MES criteria illustrates the implications of the respective rules for AD proceedings. For example, the EU may grant MET to individual companies, whereas the United States may grant a form of individual treatment to producers or declare individual industries to be 'market-oriented' (United States Government Accountability Office 2006). As shown in the next section, average AD duties levied on firms with MET are lower than those on firms receiving the standard procedure for companies in countries with NMES (Figure 1). This pattern is most likely the reason why AD duties in the EU turn out to be lower on average than AD duties in the United States. The recognition of MES for individual companies therefore appears to be a more liberal approach than the imposition of AD duties on the industry level.

Moreover, the EU and the United States fundamentally differ in the way they choose an analogue country to determine normal values. The only requirement in the EU is to choose the analogue country 'in an appropriate and timely manner', whereas the United States applies stricter rules. For example, the analogue country should be a significant producer of the respective good, have a similar per capita income and should generally feature a similar economic development level to that of the exporting country under investigation. As a result, in the EU the United States is chosen most often as a third country, while the United States typically chooses India. Choosing India as the analogous third country should intuitively lead to lower AD duties compared to choosing the United States with its higher wages and price levels. The main differences between the EU and the United States are summarised in Table 2.

The effect of granting MES to China on AD duties

Comparing a country's export prices with those of a third country, instead of using domestic prices or

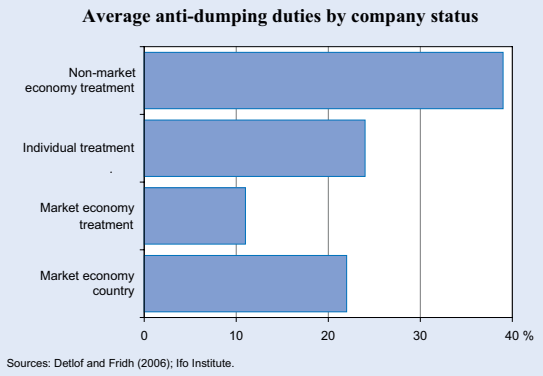
Table 2

Key differences between the EU and the US anti!dumping procedure against China

EU	USA
MET possible for individual firms	IT possible for individual producers (conditions differ from MES criteria); MET treatment possible for individual industries
Analogue country to be 'selected in a not unreasonable manner' (main analogue country: US)	Analogue country to have similar level of development and wages (main analogue country: India)
No such provision	Condition of market economy includes such factors as the administering authority considers appropriate
Applies lesser duty rule (injury margin vs dumping margin)	No such provision

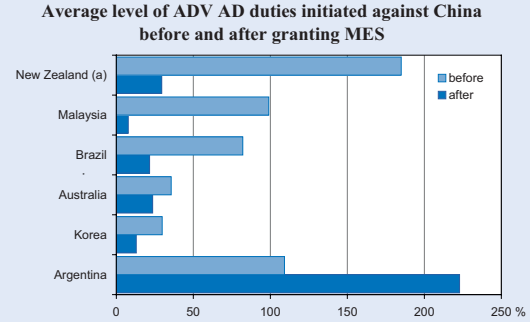
Source: Ifo Institute.

Figure 1



Sources: Detlof and Fridh (2006); Ifo Institute.

Figure 2



(a) Year of granting MES included in pre-MES-sample, as no ad valorem duties were observed before the year of granting MES.

Sources: Bown (2015); UN (2015); Ifo Institute.

costs, tends to result in higher dumping margins. In fact, research by Detlof and Fridh (2006) reveals that the methodology used to calculate dumping margins has visible effects on the levels of AD duties imposed on a company. Figure 1 shows the average duty for NMET companies to be 39 percent, 24 percent for companies receiving individual treatment and 11 percent for companies receiving MET. These results are similar to the findings of a sample conducted by the Ifo Institute that comprises AD duties in force between 2005 and 2010 against 20 products produced by several Chinese companies.

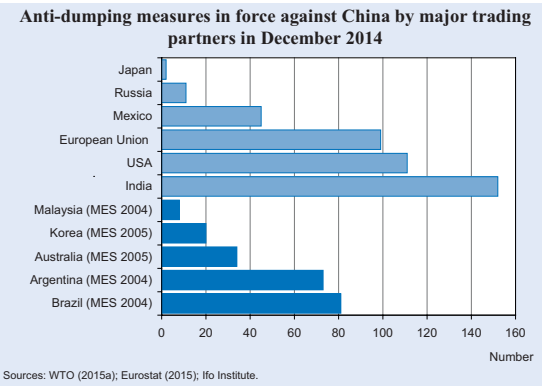
An important question that arises at this point is whether this relation is causal. On the one hand, the methodology used to determine dumping margins could have a substantial influence on the level of AD duties. According to research by Roberts (2008), the analogue country system might lead to a price bias if important market characteristics such as the wage level differ between the third country and the addressed country. As a result, abolishing this principle could lead to a fall in constructed dumping margins (Roberts 2008), rather than actual dumping margins. Under these assumptions, granting MES to China would lead to considerably lower AD duties. On the other hand, big differences in dumping margins could stem from a systematic selection, as certain Chinese firms can apply for MET if they can prove that they are acting under market economy conditions. If this group of firms practices only little or no price dumping, the resulting average dumping margins, and AD duties as a result, would be considerably lower.

According to Scott & Jiang (2015), granting China market economy status would reduce the average duties imposed by the EU by 28 percentage points. This corresponds to the difference between average AD duties against firms in countries with NMES (39 percent) and companies receiving MET (11 percent, see Figure 1). However, the drop in AD duties is not necessarily that high if the selection theory outlined in the paragraph above applies. In this case, the more competitive firms would already have self-selected into the MET group. Consequently, granting MES to China would reduce AD duties by less than predicted by Scott and Jiang. Instead, a drop to the value of about 22 percent for market economy countries reported in Figure 1 seems more likely.

A look at those countries that have granted China market economy status shows that average levels of AD duties fell after granting MES to China (with the exception of Argentina, Figure 2). This is in line with the observation of lower EU AD duties levied on MET firms.

A comparison of AD initiations across countries in Figure 3 and Table 3 reveals that countries that have granted market economy status to China on average initiated fewer AD cases against China – also relative to their overall initiations – (on average 22 percent) compared to countries that did not grant MES to China (on average 28 percent).

Figure 3



Sources: WTO (2015a); Eurostat (2015); Ifo Institute.

Table 3

AD initiations against China as % of total AD initiations

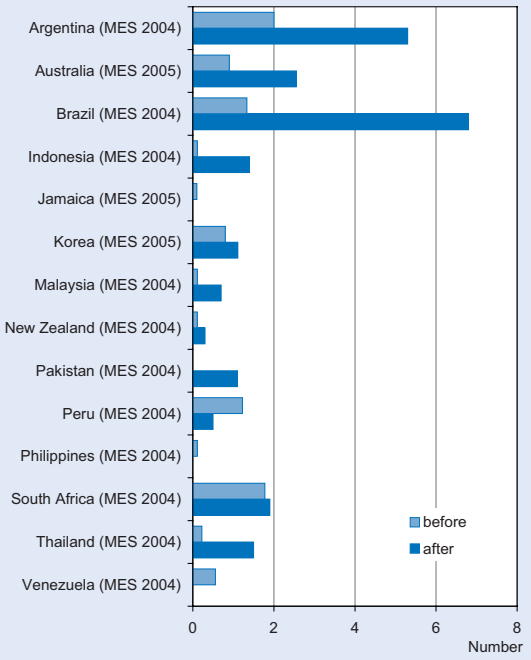
NMES	
Mexico	40
Russia	29
European Union	28
USA	26
Japan	25
India	23
MES	
Argentina (MES 2004)	32
Brazil (MES 2004)	25
Korea (MES 2005)	22
Australia (MES 2005)	18
Malaysia (MES 2004)	13

Source: Ifo Institute; WTO (2015a); Eurostat (2015); UN (2015).

Looking at individual countries over time, there is, however, no evidence of a fall in AD initiations after granting MES to China. Figure 4 illustrates the average number of initiations *per annum* for those countries having granted MES to China both before and after their doing so. The values for Argentina and Brazil are particularly remarkable because their AD initiations increased quite dramatically after granting MES to China. However, they only signed a memorandum of understanding, so they did not change their treatment of China in their AD procedures (Urdinez 2014; Puccio 2015).

Figure 4

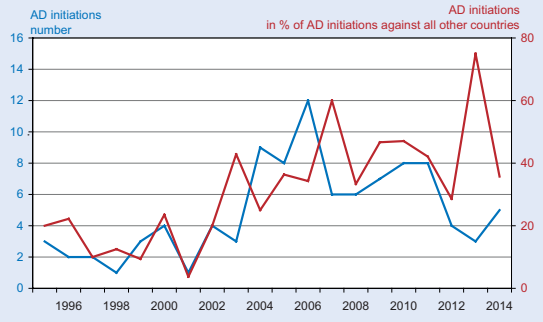
Average number of AD initiations against China per year, before and after granting MES



Sources: Urdinez and Masiero (2015); WTO (2015a); Ifo Institute.

Figure 5

EU anti-dumping initiations against China



Sources: Eurostat (2015); Ifo Institute.

EU anti-dumping cases against China

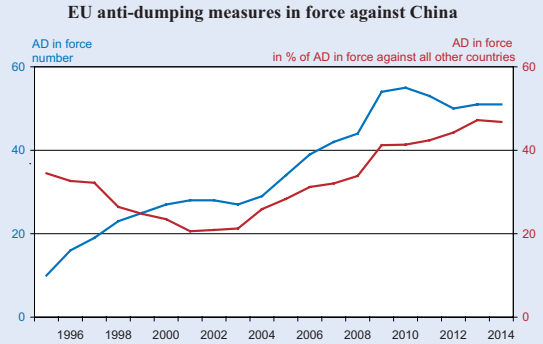
Between 1995 and 2014 the EU initiated 99 AD cases against China. This constitutes 28 percent of overall European AD initiations in that period. Figure 5 clearly illustrates that AD initiations actually increased after China's accession to the WTO in 2001 – there were six initiations per year on average after the accession, versus only two annual initiations prior to it. Moreover, there is no clear relationship between the number of EU AD initiations against China and the relative importance of Chinese imports into the EU.

Figure 6 summarises the number of European AD measures in force against China at the end of each year, both in absolute terms and as a percentage of overall measures in force against all countries. Accordingly, there is a clear trend reversal, with an increase in AD measures in force against China to 51 (47 percent of total) in December 2014, up from only 28 (21 percent of total) at the end of 2001.

It is difficult to come up with an explanation for this increase in AD cases from 2002 onwards. On the one hand, WTO membership could have established a legal framework, facilitating AD investigations. On the

Figure 6

EU anti-dumping measures in force against China



Sources: Eurostat (2015); WTO (2015a); Ifo Institute.

other hand, China's WTO entry was accompanied by an increase in trade volume, which simply offers more potential for trade conflicts.

Differences across countries

When it comes to imposing AD duties on China, the EU emerges in third place in the global ranking behind India and the United States (Figure 7). Overall, AD initiations against China have increased since the country's WTO accession, but started to fall back again as of 2009. This decline was mainly due to Argentina, India and the United States, which reduced their AD initiations from 2009 onwards. The number of initiations has started to climb again since 2009.

AD duties may be specified as *ad valorem* (ADV) or specific tariffs. Out of the 49 AD duties in force against China levied by the EU in 2014, 41 were ADV duties. This permits an easy comparison of duty levels across countries (Bown 2015). As Figure 8 illustrates, the average AD duty set by the EU was much lower than the average duty imposed by the United States (44 percent vs. 142 percent). The average AD duty levels in Argentina and Mexico were also extremely high. However, they are not directly comparable as only a small fraction of AD duties were ADV.

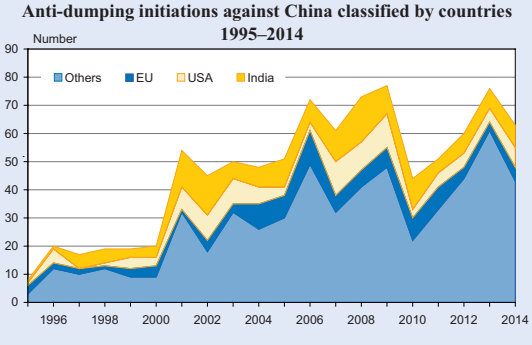
Sectoral and regional heterogeneity influences anti-dumping investigations in EU countries

Within the EU both the number of AD initiations, as well as the level of resulting duties, varies strongly across different sectors. Once imposed, AD duties affect imports into all EU countries. However, looking at the firms that have initiated the investigation may help to identify those most heavily affected by Chinese dumping behaviour. Italian, German, French and Spanish companies are most often involved in AD cases. This is not particularly surprising considering that these countries are also Europe's largest economies (Figure 9). A comparison of the number of AD measures against China relative to all other countries, however, reveals that companies in Portugal, Belgium and Poland[2] target Chinese companies more often than those in other countries.

Looking at the level of AD measures draws a different picture. Firms in Sweden, Romania, Latvia, Hungary and Denmark have initiated cases that led to the highest levels of AD duties. Moreover, Sweden, Slovenia, Romania and Hungary are the countries with the largest difference between duty levels imposed on China and those imposed on other countries. This heterogeneity across countries could be a result of differences in the economic structures of European states. If a country's economy relies heavily on a specific sector that suffers in particular from dumping by Chinese firms, a higher average level of AD duties is likely. This line of reasoning is supported by Figures 9 and 10, which show that large countries like Germany and

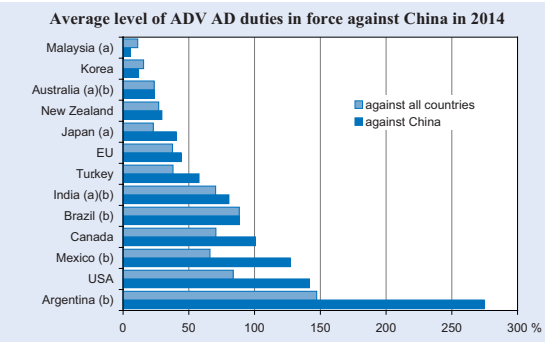
[2] Firms from Latvia are overall responsible for only one AD initiation against China.

Figure 7



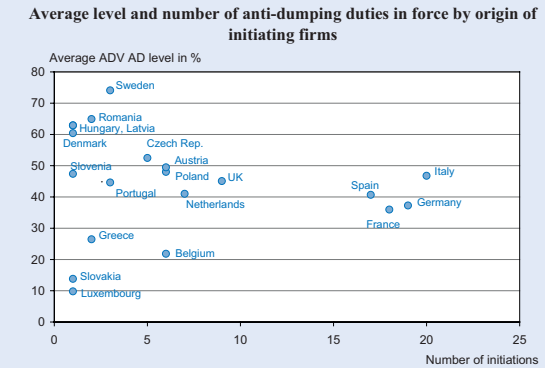
Quelle: WTO (2015a); Ifo Institute.

Figure 8



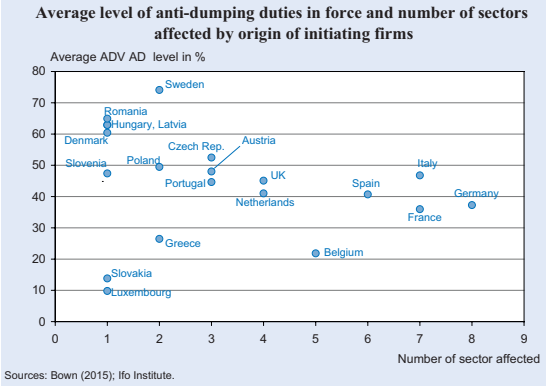
(a) Mean of maximum and minimum margin imposed
(b) Only very few ADV duties, so not necessarily representative
Sources: Bown (2015); UN (2015); Ifo Institute

Figure 9



Sources: Bown (2015); Ifo Institute.

Figure 10

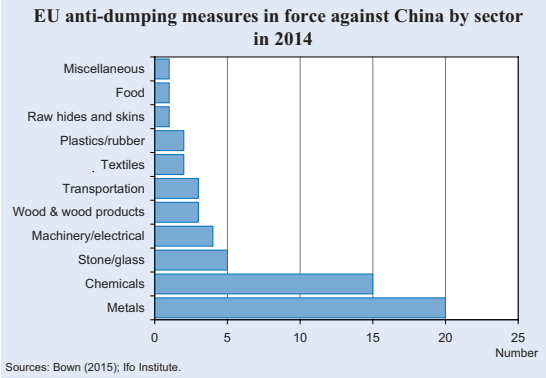


France have many AD cases in different sectors, whereas in smaller countries like Sweden or Denmark, AD cases are concentrated in fewer sectors. Consequently, in these countries individual AD cases have a strong impact on the average level of AD duties.

Sectoral differences and comparative advantage

Looking at specific sectors, most AD cases in force against China are concentrated in the metals and chemical industry (Figure 11). This observation is interesting because China appears to have a comparative advantage in the metals sector compared to the large European countries, meaning that Chinas metal industry is on average more productive than that of its European competitors (Leromain and Orefice 2013). However, the data does not provide a clear interpretation of the causal relationship between comparative advantage and AD duties. On the one hand, Chinese producers could indeed possess a real cost advantage (due to lower resource and labour costs, for example). On the other hand, the observed advantage could stem from dumping activity. In that case the price of steel in China would not reflect the 'true resource cost' (Ruiz, Somerville and Szamosszegi 2015).

Figure 11



A concentration of AD cases in a few sectors is also observable in several non-European countries. In sectors in which countries have a comparative disadvantage, AD cases are more frequent. Statistically, a weak negative within-country correlation exists between comparative advantage towards China and the number of AD measures. Nevertheless, the chemical sector – in which China appears to exhibit a comparative disadvantage – is also frequently targeted. Finally, there is no characteristic relationship between the structure of comparative advantage and the decision to grant MES to China.

To summarise, the descriptive statistics indicate that AD measures in the EU are concentrated in specific sectors, implying a particular vulnerability towards dumping by Chinese firms. As a result, even if the EU grants market economy status to China, individual sectors might demand continued special protection.

Implications for future negotiations and trade agreements

Beyond direct output and employment effects, the EU's decision to grant MES to China will certainly affect the general atmosphere of commercial relations between the two entities. First of all, the decision could influence China's behaviour in WTO negotiations and result in the prolongation of cases and increasing dispute complexity. Moreover, not granting MES to China could threaten the Sino-European bilateral investment treaty (BIT). This treaty aims to reduce the investment barriers faced by European companies in China. In this context the Chinese government may certainly question why it should promote foreign investment while the EU continues to apply strict AD regulation based on the assumption that Chinese companies do not act under market economy conditions. Similarly, the price bias resulting from constructed dumping margins using analogue country costs and prices could put pressure on EU regulation as discrimination against Chinese imports cannot be sustainable within WTO rules.

Unilaterally changing China's market economy status may also affect the EU's relations with third countries, particularly the United States. This is because increased imports from China may cause trade diversion, as cheaper Chinese imports constitute a substitute for imports from other countries. At the same time, European producers might benefit from cheap

Chinese intermediate products, providing them with a cost advantage *vis-à-vis* US producers and thus putting the latter under pressure in the European as well is in the US market. This is a particular concern for US steel producers, who are demanding that the issue be included in the ongoing TTIP negotiations.

The effect on EU employment

As for the expected employment effects of granting MES to China, European institutions frequently refer to research by Scott and Jiang (2015). In their research, the authors come to the conclusion that unilaterally granting MES to China would endanger up to 3.5 million jobs and reduce EU output by up to 228 billion euros per year. However, Scott and Jiang (2015) make strong assumptions that might not yield realistic estimates. For example, one assumption is that all Chinese companies will receive MET in the future, which would lead to a drop in average AD duties of 28 percentage points. It might be more realistic to use the market economy average, which would only result in a 17 percent drop in average duties.

Moreover, only a small share of imports is affected by AD duties (2 percent in 2014, see European Commission 2014). With imports of goods and services of 325 billion euros in 2014, this only amounts to 6.5 billion euros. Even if the deterring effect of AD duties is taken into consideration, the estimated drop in production of 228 billion euros does not appear realistic.

Long-run impacts

The current political debate on AD duties overlooks the dynamic aspects of trade policy. In general, using AD duties to address unfairly traded goods is an option that the EU can consider. However recent research suggests that duties may not be an appropriate instrument for eliminating price distortions in the long run.

AD duties tend to reduce imports from the target country in the short run. However Lu, Tao and Zang (2013) find that an undiversified AD regulation against China leads to fiercer competition in the long run. They argue that AD duties force the least productive firms out of the market. The remaining productive firms may become even more competitive by further reducing their production costs, and may increase their exports in the long run as a result. AD duties could thus lead to unintended adjustments in the exporting country. They should therefore be viewed in a broader context when discussing a reform of trade protection regulation.

Finally, price dumping is an economic phenomenon that should be mainly regulated by competition law. After all, imposing AD duties is a so-called 'second best' solution. Since the EU does not have a say on Chinese competition law, the EU uses trade regulation instruments to compensate for its lack of influence. However, the bilateral investment negotiations may offer a great opportunity to define transparent competition regulations, including the problem of price dumping. Such a procedure would result in a considerably weaker goods trade distortion with China, and would thus constitute a potential political 'first best' solution.

Conclusion

Paragraph (a) (ii) of Article 15 in China's Accession Protocol to the WTO is due to expire in December 2016. There are controversial discussions among members of the WTO, including the EU, over the degree to which trade protection duty regulations against China have to be adjusted. The discussion is dominated by political arguments, while important economic aspects are left aside. Today there are many different regulations in the EU, as well as in other countries, on how to deal with unfairly traded exports – from China for example – by imposing anti-dumping duties (punitive tariffs) to ensure a fair price level. As a result of the different procedures, AD duties against China differ considerably between the individual member states of the WTO.

If the EU grants China MES, the respective average of AD duties is mostly likely to drop. Yet given existing research, it is still difficult to estimate the extent of this drop. An average decline of between 17 and 28 percentage points is suggested in several studies. As a result of this reduction in AD duties, an increase in Chinese imports to the EU together with a decline in employment in the affected sectors is expected. However, the extent of this effect on employment varies greatly between the different studies and is partly based on very extreme assumptions.

Both the European Commission and the European Parliament have to decide on a law that has a long run impact on both bilateral trade relations with China and their economic relationship with important third countries such as the United States. Individual sectors such as the European metal and chemical industry have justified reasons for demanding legislation on China, which still makes it possible to deal with unfair competition through the use of trade defense instruments.

At the same time, discussions of the pending law change in AD regulations have to be viewed in a broader context. China is an important economic partner for the European Union. A substantial share of EU exports is based on cheap intermediate goods imported from China, which help European producers to remain competitive in world markets. Moreover, the EU currently intends to improve the bilateral economic relationship with China by means of a new investment agreement. In this broader context, a confrontation with China by maintaining a rigid AD regulation does not appear particularly far-sighted. Nevertheless, the EU should take into account the justified concerns of individual sectors – such as the metals and chemicals industry – as well as the reasonable Chinese expectations by means of a cooperative adjustment in AD regulation.

Therefore, instead of granting or refusing China market economy status, there is a possible cooperative third option, which would provide the EU with a certain margin for discretion in certain cases. This option could involve China receiving MES after the expiration of paragraph (a) (ii) in Article 15. Nevertheless, firms in individual sectors could still be treated as firms in a NME. Such a procedure was used for the first time after MES was granted to Russia in 2002. Further investigation will be necessary to verify the legal and practical feasibility of this third option in the case of China.

Overall, this short analysis demonstrates the urgent need for detailed empirical research in order to obtain reliable estimates of the effects of the discussed economic adjustments. European decision-makers should not let themselves be influenced by individual interest groups, but should follow a broader approach instead that takes into account the relevant empirical studies on the matter.

References

Bown, C.P. (2015), *Global Antidumping Database,* The World Bank, http://econ.worldbank.org/ttbd/gad/.

Detlof, H. and H. Fridh (2006), *The EU Treatment of Non-Market Economy Countries in Antidumping Proceedings,* Stockholm: Swedish National Board of Trade.

European Commission (2014), *Facts and Figures on EU-China Trade, (March), 1–2,* http://trade.ec.europa.eu/doclib/docs/2009/september/tradoc_144591.pdf.

European Union (2009), *Council Regulation (EC) No 1225/2009 on Protection against Dumped Imports from Countries Not Members of the European Community,* Official Journal of the European Union, http://trade.ec.europa.eu/doclib/docs/2010/april/tradoc_146035.pdf.

GATT (1947), *The General Agreement on Tariffs and Trade 1947,* https://www.wto.org/english/docs_e/legal_e/gatt47_e.pdf.

Hufbauer, G.C. and C. Cimino (2015), *Looming US-China Trade Battles?: Market Economy Status (Part II),* Trade and Investment Policy Watch, http://blogs.piie.com/trade/?p=145.

Leromain, E. and G. Orefice (2013), *New Revealed Comparative Advantage Index: Dataset and Empirical Distribution,* CEPII Working Paper (June), http://www.cepii.fr/pdf_pub/wp/2013/wp2013-20.pdf.

Lu, Y., Z. Tao, and Y. Zhang (2013), "How Do Exporters Respond to Antidumping Investigations?", *Journal of International Economics* 91(2), 290.doi:10.1016/j.jinteco.2013.08.005.

Puccio, L. (2015), *Granting Market Economy Status to China: An Analysis of WTO Law and of Selected WTO Members' Policy,* European Parliamentary Research Service, (PE 571.325), doi:10.2861/22416.

Roberts, M. (2008), *The US-China Trade Relationship: Explaining U.S. Anti-Dumping Duties on China,* Stanford Center for International Development Working Paper 360.

Ruiz, M.M., R. Somerville and A. Szamosszegi (2015), *Assessment of the Probable Economic Effects on NAFTA of Granting Market Economy Status to China,* http://www.steelnet.org/new/20151110a.pdf.

Scott, R.E. and X. Jiang (2015), "Unilateral Grant of Market Economy Status to China Would Put Millions of EU Jobs at Risk", *EPI Briefing Paper* 407, 1–23.

UNCTAD (2015), *Glossary of Customs Terms: ASYCUDA – Automated System for Customs Data*, http://www.asycuda.org/cu-glossa.asp?term=market+economy.

United States Government Accountability Office (2006), *Eliminating Nonmarket Economy Methodology Would Lower Antidumping Duties for Some Chinese Companies,* Report to Congressional Committees.

Urdinez, F. and G Masiero (2015), "China and the WTO: Will the Market Economy Status Make Any Difference after 2016?", *The Chinese Economy* 48, 155–172.

Urdinez, F. (2014), *The Political Economy of the Chinese Market Economy Status Given by Argentina and Brazil,* https://www.icesi.edu.co/revistas/index.php/revista_cs/article/viewFile/1853/2431.

WTO (1994), *Agreement on the Implementation of Article VI of the General Agreement on Tariffs and Trade,* Geneva.

WTO (2015), *European Union – Cost Adjustment Methodologies and Certain Anti-Dumping Measures on Imports from Russia. DISPUTE SETTLEMENT,* https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds474_e.htm.

Measuring the Natural Rate of Interest in the Eurozone: A DSGE Perspective

Atanas Hristov*

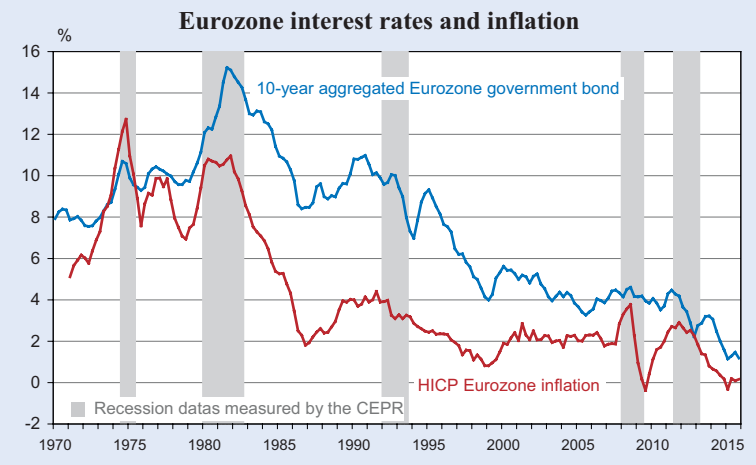
Short-term and long-term interest rates are very low by historical standards both in the Eurozone and in other advanced economies. Low interest rates are not a temporary phenomenon, but part of a longer-term tendency – a declining trend that started to take shape prior to the recent global financial crisis and the worldwide recession that followed. Figure 1 shows that ten-year aggregated government bond yields in the Eurozone reached a peak in the early 1980s that was unmatched in the preceding decade, and have been declining with some interruptions ever since. Fluctuations in inflation, as shown in Figure 1, only partly explain this pattern. Since mid-2014, in view of the far more moderate than expected economic dynamic and decreasing inflation expectations, several central banks, including the European Central Bank (ECB) and the Bank of Japan, have implemented negative interest rates. Questions of whether central banks have excessively lowered the target for their benchmark short-term interest rates, whether they need to cut them any further, or, in the case of the Federal Reserve, how to increase the federal funds rate swiftly are top priorities for policymakers and academicians.

While central banks steer the short-term nominal interest rates, as many economists point out, in the long run rates are beyond the control of monetary policy (Bernanke 2015). All other things being equal, a monetary policy of lowering short-term rates tends to boost economic activity and, in turn, lift inflation and inflation expectations; and *vice versa.* The level at which rates must settle in due course to keep inflation stable over an extended period of time is determined by the economy's underlying characteristics. More specifically, a long list of factors, including households' preferences for present as opposed to future consumption and the economy's potential for growth, establish the real (that is, inflation-adjusted) interest rate. According to a concept introduced in 1898 by Knut Wicksell and fully integrated in modern macroeconomic theory by Michael Woodford (Woodford 2003), this long-term rate is where the real interest rate settles if inflation were at target and the economy were at maximum employment. This concept is known as the *natural, equilibrium, or Wicksellian* rate of interest.

The natural rate of interest is one of the central concepts to understanding the effects of monetary policy and macroeconomic relationships. It presents an important benchmark, consistent with the concept of potential output, as to whether policy is too tight or too loose: interest rates above the natural rate tend to lower inflation, and vice versa. For central bankers the goal is to direct interest rates so that they match up with the natural rate.

This article asks where the real natural rate of interest in the Eurozone currently lies? In its bid to answer this

Figure 1



Sources: Eurostat; Area Wide Model dataset for the euro area; Center for Economic Policy Research (CEPR).

* Ifo Institute. I am grateful to Tim Oliver Berg and Timo Wollmershäuser for their helpful discussions and comments.

question, the article builds on the well-known empirical framework by Smets and Wouters (2003 and 2007). Its results suggest that the natural real rate of interest in the Eurozone has gradually declined over the past 35 years and is currently very low by historical comparison. This provides some indications that, despite the fact that the ECB steered short-term rates into negative territory in mid-2014, the stance of monetary policy has remained tight since then. This, among other confounding factors, may be the reason why employment has chronically failed to reach full employment and inflation is stuck at levels far below the two percent target. Model projections for the natural rate are consistent with the expectations of many observers that key ECB interest rates will remain at their present or lower levels for an extended period of time, and well past the year 2017. However, given the model uncertainty involved in the analysis, it is unclear exactly how long the return to positive territory will take.

Estimation of the real natural rate of interest

Despite the importance of the natural rate of interest, using it to guide monetary policy decisions is highly problematic due to the fact that the natural rate is an unobservable variable, which limits its practicality as a gauge for measuring and tuning the stance of monetary policy. To overcome this difficulty, economists have developed various empirical methods that attempt to derive the natural rate from actual data, starting from different premises.

An important contribution to the literature on measuring the natural rate is an approach proposed by Laubach and Williams (2003; henceforth LW) applied to data for the United States. The authors estimate the natural real interest rate and potential output growth simultaneously, using a small-scale macroeconomic model linking real GDP, inflation and a short-term interest rate. In this model, by construction, the gap between real and potential GDP is a function of past gaps between the real interest rate and the real natural rate. The method makes it possible to separate fluctuations in the natural rate driven by long-run developments in the economy's underlying characteristics from those caused by cyclical factors. Thus, as discussed in a recent article by the two authors (Laubach and Williams 2015), the proposed measure is best-suited to gauge the level of the natural rate *in the long run.*

More recently, a new approach to estimating the natural rate has emerged, which is based on New-Keynesian Dynamic Stochastic General Equilibrium (DSGE) models. This approach makes it possible to estimate alternative model-based notions of the natural rate by introducing relationships among the economic variables informed by some of the latest advances in economic theory. This article builds on such an approach. As with all empirical work based on structural models, the results may be sensitive to some features of the model framework. To illustrate this point, the results across two models that differ in the specification of the financial sector are compared. The first model employed is an extension of the framework proposed by Smets and Wouters (2007; henceforth SW) for the Eurozone. The present work differs from the original Smets-Wouters model in that it introduces some important departures from the original specification, which are briefly described below.[1] The second model is obtained by introducing credit frictions in the first framework (henceforth SW-fa), using the financial accelerator mechanism proposed by Bernanke, Gertler and Gilchrist (1999). The actual implementation of the financial accelerator follows Del Negro, Giannoni and Schorfheide (2015). The latter article shows that the marriage of the New-Keynesian model with the financial accelerator provides a reasonable explanation for the evolution of inflation in the wake of the recent global financial crisis and the subsequent tightening of financing conditions.

In contrast to the LW approach, the DSGE method tends to focus *on the short-run* fluctuations in the natural rate, taking the long-run value as constant. In the latter approach, the real natural rate is the inflation-adjusted rate of interest that would prevail after wages and prices adjust to drive economic activity to its most efficient level, making full use of all available resources. In other words, the natural rate is the rate that would prevail in the real-business cycle model that lies behind the sticky-wage-price model, and if there were no shocks to the mark-up on goods and labour markets, and no financial frictions. Barsky, Justiniano and Melosi (2014); Cúrdia (2015); and Del Negro, Giannoni, Cocci, Shahanaghi and Smith (2015) have used a similar definition to estimate the natural rate of interest. This short-run natural rate can fluctuate substantially over time, due to changes in its determinants – the potential growth rate of the economy, demographic characteristics of the population, consumers' impatience, etc. Notably, however, by construction the stance of monetary policy does not af-

[1] More details about the model structure, prior and posterior moments of the model parameters are available upon request.

fect the natural rate: once wages and prices have adjusted, the central bank has no meaningful role in steering economic activity to its potential.

Coming back to the two models used in this article, let us begin by introducing a slow moving inflation drift in the monetary policy rule, as compared to the original Smets-Wouters specification, whereby the central bank targets a constant inflation rate in all periods. This primarily accounts for the stability of long-run expected inflation since 2000. Secondly, due to a lack of consistent Eurozone data available on aggregate hours worked, employment data is used in the estimation instead. As a result, following Smets and Wouters (2003), an additional equation is introduced into the model, which defines how volatile fluctuations in total hours worked translate into more persistent changes in employment. Thirdly, the model substitutes the transitory technology shocks in the original Smets-Wouters framework with permanent shocks in technology. The permanent technology then follows an AR(1) in growth rates in technology. This makes it possible to capture secular stagnation, as discussed in Summers (2014). According to the supply-side secular stagnation hypothesis (Gordon 2015), following the recent financial crisis the failure of output and employment to return to their trend levels relatively quickly may relate to a fundamental decline in the rate of productivity growth.

Both models are estimated with Bayesian techniques. The first framework, SW, uses data on real GDP, consumption, investment, employment, real wages, inflation as measured by the consumer expenditure price index, and the three-month interbank interest rate. In the estimation of the second model, SW-fa, one key additional variable is used, the spread between IBoxx's BBB corporate non-financial bond yield and the ten-year German government bond yield. The parameters of the SW model are estimated twice; firstly, using data over the period 1980:2– 2015:4 and, secondly, over the period 1999:4–2015:4, with very similar results. Due to data limitations with the credit spread, the SW-fa model is estimated over the period 1999:4–2015:4. To preserve comparability between the results from the two frameworks, the estimates obtained over the shorter sample are presented. Using this sample period has an additional advantage in that it minimises the impact of various structural breaks that may have occurred following the introduction of the euro.[2]

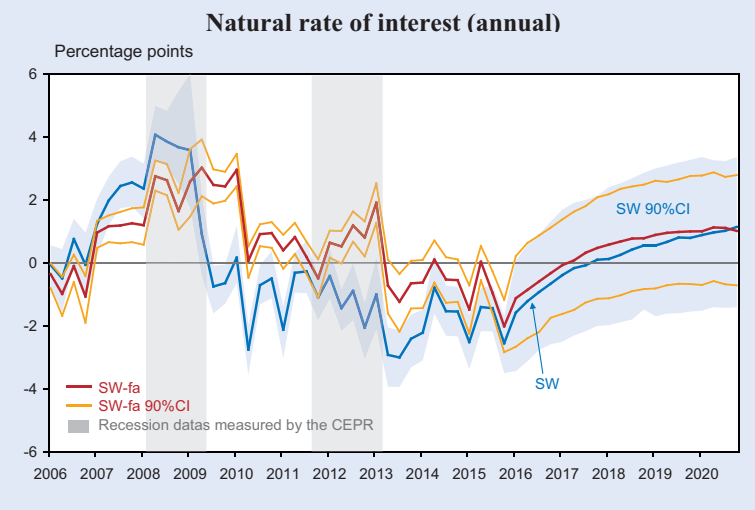
The real natural rate of interest is volatile and hard to pin down

Figure 2 presents the smoothed median measures of the natural rate of interest (on an annual basis) from the two DSGE models since 2006, along with their forecasts. The light-blue shaded areas represent the 90%-probability ranges of possible estimates from the SW model, while the area between the orange lines show the respective estimates from the SW-fa framework. Gray vertical shaded areas indicate recession dates as measured by the Center for Economic Policy Research (CEPR).

Fluctuations in the median natural rate of interest implied by the two models are of a similar order of magnitude as the volatility of the real interest rate over the estimation period. Their respective standard devia-

[2] The constraint of the zero lower bound on the policy rates has not been considered in the current estimation and will be properly dealt with in future work.

Figure 2



Notes: The solid blue line shows the median estimates of the real natural rate of interest in the extended Smets-Wouters (SW) model. The light-blue shaded region is the corresponding 90-percent confidence interval. The red solid line shows the median estimates of the real natural rate of interest in the extended Smets-Wouters model with a financial accelerator (SW-fa). The orange line represents the corresponding 90-percent confidence interval and the gray shaded areas indicate recession dates as measured by the CEPR.

Sources: Eurostat; Area Wide Model dataset for the euro area; author's calculations; Center for Economic Policy Research (CEPR).

tions are 187 and 128 basis points, compared to a standard deviation of the actual real rate of 162 basis points. The estimates, however, are surrounded by a great deal of uncertainty. The width of the 90-percent probability interval for the natural rate is about 1.5 percentage points on average and widens to 4.2 percentage points in 2009:1. The probability intervals for the forecasts are even wider, ranging from 3.8 percentage points in 2015 to 4.8 percentage points in 2020. From a practical point of view, while some policymakers are likely to consider such measures implausible, what they might find even more unpalatable is the difference between the median estimates of the natural rate from the two frameworks. Although this difference is not 'sizeable' over the estimation period (1.0 percentage points on average), the distance between the two measures widened to about 3.0 percentage points in 2009 and 2013, rendering estimates of the natural rates a poor guide to monetary policy.

The natural rate fell more sharply following the financial crisis according to the SW model as compared to the SW-fa model, from close to 4 percent in early 2008 to below – 2 percent in early 2010. However, both measures have remained negative since early 2013, fluctuating recently at around – 2 percent. What factors caused this sizeable fall in the natural rate?

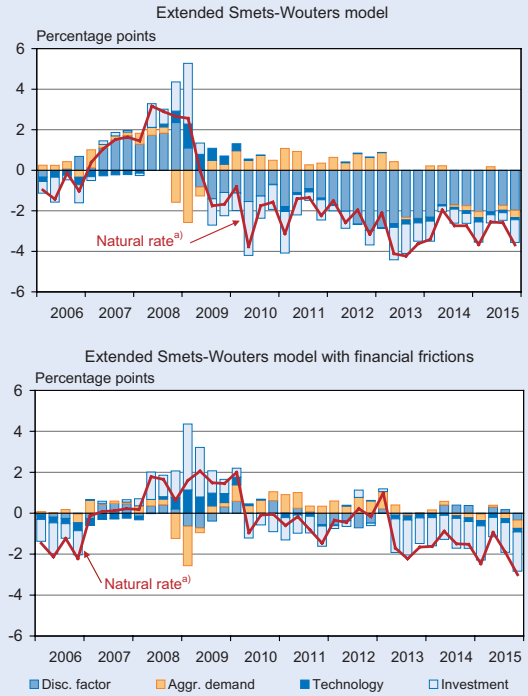
Figure 3 shows the historical contribution of each of four types of shocks (discount factor, investment-specific, aggregate demand, and technology shocks) to the evolution of the natural rate obtained by the SW and SW-fa models over the sample period in deviations from its average. The dominant source of the secular drop in the natural rate according to the SW model is driven by negative stochastic discount factor shocks (shown in blue), which capture exogenous fluctuations in consumer preferences to save and invest, as well as other not explicitly specified distortions in consumption decisions. This factor pushed up the natural rate above its sample period average by 2 percentage points in 2007/08, while it decreased the rate by over 1 percentage points in any single year since 2009. The factor's depressive effect was felt most strongly in 2012, when it was responsible for the rate remaining below its average by 3 percentage points. By contrast, the presence of the financial accelerator mechanism in the SW-fa model reduces the importance of the discount factor shocks to the evolution of the natural rate. In the latter model, the significance of a second disturbance increases in both relative and absolute terms. This is a shock to the rate of return on capital (shown in light blue), which might be caused for example by changes in the efficiency of the investment technology. This disturbance has continuously depressed firms' eagerness to invest since early 2010. According to the SW-fa model, this factor was solely responsible for the rate remaining below its average by 2 percentage points in 2013–2015. Other aggregate demand factors (shown in orange), such as government expenditure, lifted the natural rate by about 0.5 percentage points in 2008–2014. Since 2006, permanent changes in total factor productivity (shown in dark blue) have played a minor role in the variation in the natural rate.

The stance of monetary policy and economic activity

The *interest rate gap* is a notion closely related to the output gap: both concepts are central to the conduct of monetary (and fiscal) policy. It can be shown that deviations of the inflation-adjusted interest rate from the real natural rate – that is, the interest rate gap – are associated with deviations in output from its potential level (Justiniano, Primiceri and Tambalotti 2013). A positive interest rate gap indicates a restrictive monetary policy

Figure 3

Factors contributing to changes in the natural rate



a) The deviations of the real naturale rate of interest from its long-term average. Bars: the contribution of particular shocks to the evolution of the natural rate. The real natural rate over the sample period is estimated at 1.0 percent in both models.

Source: Eurostat; Area Wide Model dataset for the euro area; author's calculations.

stance and is associated with moderating inflationary pressures and a negative output gap. Theoretically, if policymakers manage to track the natural rate, the economy will produce at its maximum level of output without straining or idling resources – in other words, policymakers will close the output gap.

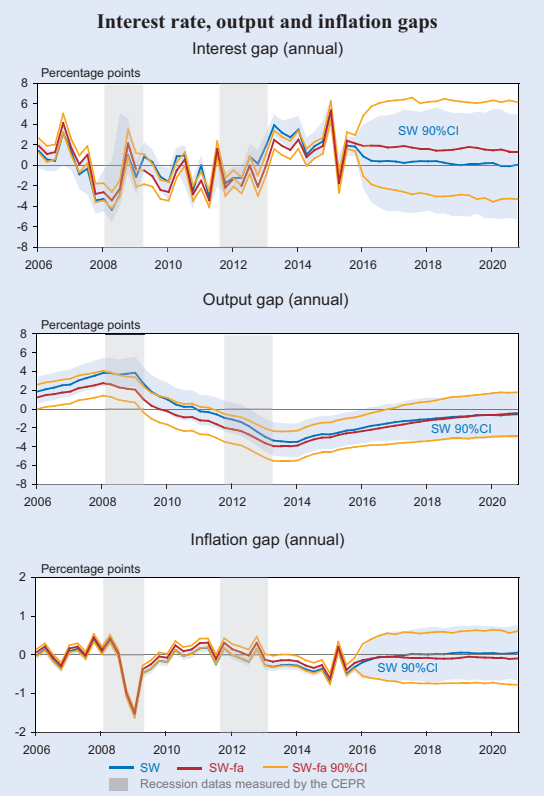
In practice, however, minimising the interest rate gap is difficult. The interest rate gap is a noisy signal of the economy's underlying characteristics: firstly, it depends on accurately gauging the natural rate, which is a latent variable, and secondly it depends on estimates of aggregate variables such as GDP that are subject to multiple revisions. To make things worse, monetary policy ability to efficiently stabilise economic activity might be considerably constrained with short-term rates being close or below the lower bound of zero percent.

Figure 4 plots the interest rate, output, and inflation gaps obtained by the SW and SW-fa models, along with the forecasts of the gaps. Here, the inflation gap is defined as the percentage deviation of actual inflation from the estimated inflation target. Firstly it is worth noting that, like the natural rate, the interest rate gap has also fluctuated considerably over the sample period, with an average of 1.5 percentage points and a standard deviation of 190 basis points. The figure shows that the moderation in inflationary pressures in the summer of 2008, as well as the intensification of the financial crisis following the bankruptcy of Lehman Brothers, may explain why the ECB cut its policy rates so strongly in the fourth quarter of 2008, even before the output gap turned negative.[3]

Fluctuations in the interest rate gap around the zero line in 2009–2012, based on the two models, indicate that the ECB's swift and decisive reaction to deteriorating economic circumstances may have been accommodative enough to guarantee price stability over the medium term. However, the spreading of the European sovereign debt crisis beyond the periphery of the Eurozone in the second half of 2011, when yields on government bonds from Spain and Italy sharply rose, tipped the euro area back into another recession. The debt crisis had significant adverse economic and labour market effects. While the ECB managed to calm financial markets by cutting policy rates and offering unlimited support for all Eurozone countries involved in the sovereign state bailout programs in September 2012, the results suggest

[3] In fact, the output gap has an apparent tendency to significantly lag behind recessions. In other words, economic activity can often be seen to be expanding rapidly while the gap continues to be negative and sizable, and *vice versa*.

Figure 4



Notes: The solid blue lines show the median estimates of the interest, output and inflation gaps in the SW model. The light-blue shaded regions are the corresponding 90-percent confidence intervals. The solid red lines show the median estimates of the interest, output and inflation gaps in the SW-fa model; The orange lines are the corresponding 90-percent confidence intervals and the gray shaded areas indicate recession dates as measured by the Center for Economic Policy Research (CEPR).

Sources: Eurostat; Area Wide Model dataset for the euro area; author's calculations; Center for Economic Policy Research (CEPR).

that the monetary stimuli were not supportive enough to prevent the interest gap from increasing. Since 2013, the recovery has been fairly slow, with output remaining below its potential and inflation falling below its target.

Both models predict a very gradual closing of the interest rate and output gaps. The gaps will close due to a slow abatement of the headwinds depressing growth, as shown in Figure 3, and the natural rate will return to pre-crisis levels in early 2018. As discussed by Cúrdia (2015), however, a DSGE model for the United States has repeatedly and incorrectly forecast the 'normalisation' of the natural rate for the past seven years. In reality, the forecasts have not materialised and the prevailing natural rate remains negative even in the fourth quarter 2015, similar to the Eurozone estimates shown here, despite the significant improvements in labour market conditions in the United States. Such an analysis presents a cautionary tale for the Eurozone prospects as well. This is also reflected in the low German

harmonised 10-year bond yields – presumably an indicator of the Eurozone safe rates, which were only 0.17 basis points in March 2016. It is also consistent with the expectations of many observers that the Eurozone economy will remain depressed for many years to come.

Beyer and Wieland (2016) document that estimates of the natural rate of interest in the Eurozone obtained by the LW method dropped markedly following the global financial crisis, but never turned negative. Their results suggest that the ECB's response to the sovereign debt crisis may have been expansionary because the central bank steered the policy rates below their long-run natural levels. As pointed out by Krugman (2015), however, if monetary policy is constrained, by the lower bound on the policy rates, for instance, and given that the constraint is binding for several years, the interest rate gap may remain open for an extended period of time. In other words, in this case the long-run natural rate may be a misleading measure of the prevailing monetary policy conditions. The negative output gap in the last five years provides some support for this hypothesis.

Conclusion

This article studies the evolution of the natural rate, using two versions of Smets-Wouters model, with and without credit frictions. The estimates highlight a substantial degree of time variation in the natural rate, as well as variation between the measures from the two frameworks. The sharp fall in the natural rate provides support for the enactment of conventional and non-conventional measures to ease monetary policy. The lower bound on the policy rates may partly explain the persistently negative output gap in the last five years. Model projections for the natural rate indicate that key ECB interest rates will remain at their present or lower levels for an extended period of time, and well past the year 2017. Given the model uncertainty involved in the analysis, however, it remains unclear exactly how long the return to positive territory will take.

Many explanations for the low natural rate and the anemic recovery in many advanced economies following the Great Recession have been put forward. The trend towards a decline in the natural rate can partly be blamed on global factors, such as fewer investment opportunities in advanced economies as well as a higher propensity to save in emerging markets (Bernanke 2007). These factors are not explicitly modelled in the current analysis. It could also reflect secular stagnation, as argued by Summers (2014), whereby deleveraging by households and contractionary fiscal policy have helped to significantly weaken global demand. On the other hand, it could also reflect permanently lower growth rates in productivity (Gordon 2015). Such long-run effects are also hard to analyse using the current methodology. Some of these issues will be dealt with in future work.

References

Barsky, R., A. Justiniano and L. Melosi (2014), "The Natural Rate and its Usefulness for Monetary Policy Making", *American Economic Review Papers and Proceedings* 104(7), 37–43.

Bernanke, B.S. (2007), *Global Imbalances: Recent Developments and Prospects,* Bundesbank Lecture, 11 September.

Bernanke, B.S. (2015), *Why Are Interest Rates So Low?,* Ben Bernanke's Blog, Brookings Institution, 30 March.

Bernanke, B.S., M. Gertler and S. Gilchrist (1999), "The Financial Accelerator in a Quantitative Business Cycle Framework", in: Taylor, J.B. and M. Woodford (eds.), *Handbook of Macroeconomics,* Vol. 1C, Amsterdam: North Holland.

Beyer, R.C.M. and V. Wieland (2016), *Schätzung des mittelfristigen Gleichgewichtszinses in den Vereinigten Staaten, Deutschland und dem Euro-Raum mit der Laubach-Williams-Methode,* Institute for Monetary and Financial Stability Working Paper Series 100.

Cúrdia, V. (2015), *Why So Slow? A Gradual Return for Interest Rates,* Federal Reserve Bank of San Francisco Economic Letter 2015-32.

Del Negro, M., M. Giannoni, M. Cocci, S. Shahanaghi and M. Smith (2015), *Why Are Interest Rates So Low?,* Liberty Street Economics blog, FRB New York, 20 May.

Del Negro, M., M.P. Giannoni and F. Schorfheide (2015), "Inflation in the Great Recession and New Keynesian Models", *American Economic Journal: Macroeconomics* 7(1), 168–196.

Gordon, R.G. (2015), "Secular Stagnation: A Supply-Side View", *American Economic Review: Papers & Proceedings* 105(5), 54–59.

Hamilton, J.D., E.S. Harris, J. Hatzius and K.D. West (2015), *The Equilibrium Real Funds Rate: Past, Present, and Future,* NBER Working Paper 21476.

Justiniano, A., G.E. Primiceri and A. Tambalotti (2013), "Is There a Tradeoff between Inflation and Output Stabilization?", *American Economic Journal: Macroeconomics* 5(2), 1–31.

Krugman, P. (2015), *Liquidity Traps, Local and Global,* The Conscience of a Liberal Blog, New York Times, 1 April.

Laubach, T. and J.C. Williams (2003), "Measuring the Natural Rate of Interest", *Review of Economics and Statistics* 85, 1063–1070.

Laubach, T. and J.C. Williams (2015), *Measuring the Natural Rate of Interest Redux,* Hutchins Center Working Papers 2015-16.

Smets, F. and R. Wouters (2003), "An Estimated Dynamic Stochastic General Equilibrium Model of the Euro Area", *Journal of the European Economic Association* 1, 1123–1175.

Smets, F. and R. Wouters (2007), "Shocks and Frictions in US Business Cycles: A Bayesian DSGE Approach", *American Economic Review* 97, 586–606.

Summers, L.H. (2014), "U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound", *Business Economics* 49, 65–73.

Wicksell, K. (1898), *Interest and Prices,* London: Macmillan.

Woodford, M. (2003), *Interest and Prices: Foundations of a Theory of Monetary Policy,* Princeton: Princeton University Press.

Climate Notes: Is Sand Running between Our Fingers?

Jutta Albrecht-Saavedra and Jana Lippelt*

Sand seems to be the epitome of a plentiful resource. On closer examination, however, this highly important raw material turns out to be limited and precious; and must be handled carefully and in a sustainable manner. The results of excessive sand depletion range from a loss of biodiversity to a negative impact on the climate and geopolitical implications, to name just a few outcomes. In other words, sand is a far more exciting study subject than it appears at first glance.

Sand is created by the erosion of rock, which is broken down into particles by wind, water and ice and transported, sorted and deposited again. Sand is defined geologically and mineralogically as being composed of particles of naturally formed loose rock with a grain size diameter of between 0.063 and 2 mm. By contrast, particles that are more or less round and have a diameter of between 2 and 63 mm, are described as gravel. For simplicity's sake both categories are referred to as 'sand' below (HLUG 2006).

Sand and gravel are key commodities that have been industrially extracted for almost 200 years. They are used in a very wide range of areas such as, for instance, the glass and electronics sector and the chemical industry, but over 90 percent of sand is used in construction. Sand is mostly removed from river beds and sandpits, but since such resources are becoming increasingly scarce, extraction activities are increasingly shifting to the sea bed and coasts. Interestingly, the most obvious reservoirs of sand, namely deserts, are not considered as stocks of raw material since the shape of sand grains in deserts make them unsuitable for the construction sector (the sand grains are already too round and do not give rise to a sufficiently stable structure when used in cement production). Sand from the sea, by contrast, is very good for making cement, despite the fact that it has to be thoroughly purified of salt to prevent corrosion if steel is set in the cement.

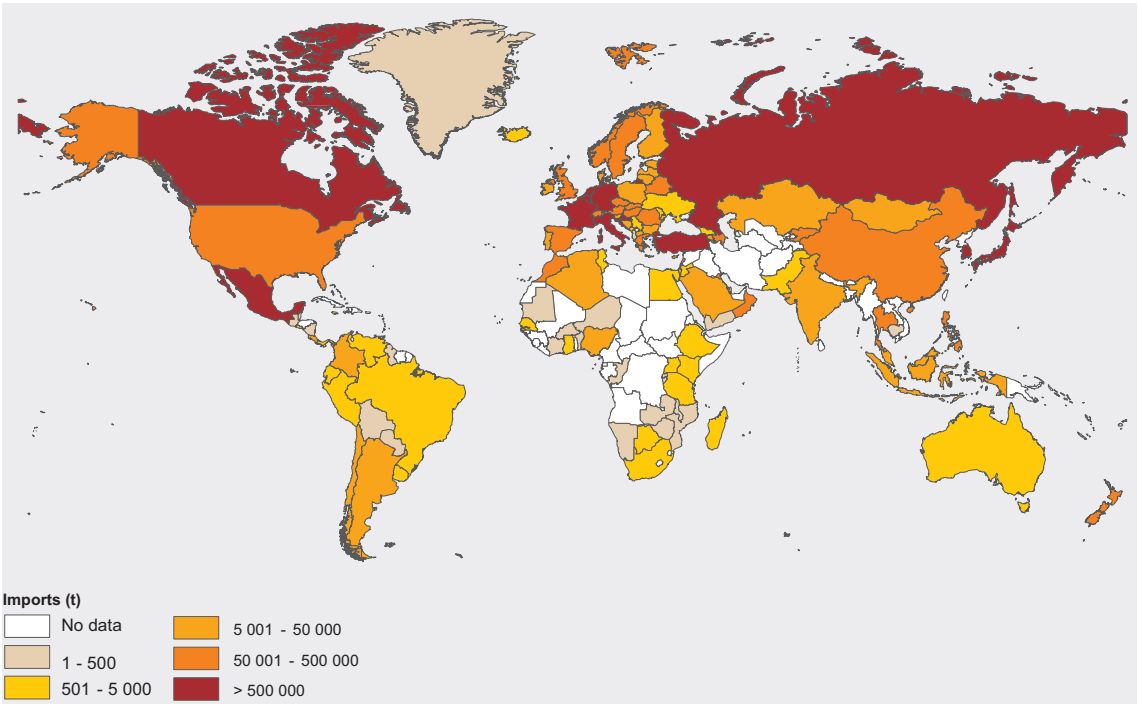
Although sand and gravel are the world's most widely used commodities after water, there is an astonishing lack of detailed statistical data on their extraction and use. Estimates by the United Nations Environmental Programme (UNEP) attempt to come close to the magnitude of worldwide sand use *via* data on global cement production, and produce astonishing figures. Based on statistics on the volumes of cement produced worldwide in 2012 – the 150 countries taken into consideration produced 3.7 billion tonnes of cement in 2012 – UNEP infers that sand consumption in that year must have totalled around 26 to 30 billion tonnes, since the amount of sand required to produce cement is six to seven times as high as the final volume. The amount of cement produced in a single year would therefore be enough to build a cement wall of 27 metres in width and height all the way around the earth's equator (UNEP 2012). Sand consumption is also growing very rapidly, especially due to the growing consumption in booming emerging economies (Figure 1). These developments are illustrated by an astounding trend: China's cement consumption during the period of 2011-2013 was around 40 percent higher than consumption in the United States in the entire 20th century (The Washington Post 2015).

However, we are not only consuming a huge and growing amount of sand, we are also negatively impacting its creation and the transport of sand in rivers with our major interference in countryside structures, whether this be *via* agriculture, land clearance or the construction of large reservoirs. The construction of dams in particular has proven an increasingly important factor in lower sand transport over the last 50 years: dams form sediment traps where large quantities of sand collect. The sediment flows of large Chinese rivers have fallen over the last 50 years as a result of dam construction from around 1,800 million tonnes (Mt) to just 370 Mt of sediment (Gupta *et al.* 2012). The Nile can be cited as another well-known

* Ifo Institute.

Figure 1

Imports of Sand 2013



Source: UN Database 2015.

example, whose sediment load fell from around 100 million tonnes per year to almost zero due to the construction of the Assuan reservoir (UNESCO 2009). Such extensive and far-reaching interventions in sand circulation cannot be without ecological consequences. Such excessive sand depletion can have a negative impact on water circulation, for example, since ground water formation may fall as a result of riverbed dredging. Moreover, contamination often occurs through oil or the penetration of salt water from nearby coastal waters. Thanks to changed streams and sediment patterns, interventions in riverbeds and/or the sea bed can also lead to changes in the composition of ecosystems, as well as to the destruction of the habitats for many species (Mattamana *et al*. 2013). Moreover, the extraction, transportation and use of such huge volumes of sand is also linked to high energy use and CO_2 emissions.

Another key point is the potential threat through erosion from excessive sand depletion, which is particularly acute for coasts and islands; and the progressive loss of land, as well as dwindling protection against natural catastrophes like floods and storms. Indonesia provides a particularly impressive example of the serious consequences that unchecked sand depletion, and the land losses that accompany it, can have. Indonesia – a large archipelago consisting of 17,500 islands – is highly vulnerable to both natural catastrophes, which are having a stronger impact due to climate change, and to human ecological interventions with serious consequences. For a long time Indonesia was a major supplier of sand and gravel for Singapore, whose construction boom absorbed huge volumes of landfill and construction material. Singapore, which is small in terms of its area, but very strong economically and densely populated, has put a great deal of effort into expanding its surface area with land reclamation; and has gained an additional 20 percent in surface area over the past 40 years thanks to this technique. The extensive removal of sand from the Indonesian coast has led to the disappearance of at least 24 small islands over the last ten years, and to changes in the state borders between Indonesia and Singapore, resulting in border disputes (New York Times 2010). Indonesia attempted to stop the sand removal with an export ban, which it even tried to reinforce by deploying its navy. However, with global demand for sand remaining high, illegal sand removal continued and organisations, in some cases criminal, formed in Indonesia – and in other countries like Cambodia, India or Morocco for example – which are prepared to satisfy this demand at almost any cost. Whole beaches regularly disappear in short periods of time, transported off in trucks and baskets to building sites worldwide.

In view of the problems outlined above, what measures can be called for? Firstly, efforts must be made to

raise awareness of the problem, which could partly be achieved by creating a far better database. In addition, sand must be treated more rationally as a resource *via*, for example, the recycling of old cement and the use of sedimentary deposition near reservoirs as a commodity resource. A scientifically-based, transparent regulation of sand use is also needed, along with suitable pricing mechanisms for sand and its management as a resource.

References

Gupta, H., S.-J. Kao and M. Dai (2012), *The Role of Mega Dams in Reducing Sediment Fluxes: A Case Study of Large Asian Rivers*, http://www.researchgate.net/profile/Harish_Gupta2/publication/233860266_The_role_of_mega_dams_in_reducing_sediment_fluxes_A_case_study_of_large_Asian_rivers/links/09e4150d100ece3ba5000000.pdf.

Hessisches Landesamt für Umwelt und Geologie (HLUG, 2006), *Fachbericht Sand und Kies,* http://www.hlug.de/fileadmin/dokumente/geologie/rohstoffe/Fachbericht%20Sand%20%26%20Kies%2015%2011%2006.pdf.

Mattamana, B.A., S. Varghese and K. Paul (2013), "River Sand Flow Assessment and Optimal Sand Mining Policy Development", *International Journal of Emerging Technology and Advanced Engineering* 3, 305-317.

New York Times (2010), "Indonesia's Islands Are Buried Treasure for Gravel Pirates", 27 March, http://www.nytimes.com/2010/03/28/weekinreview/28grist.html?_r=0.

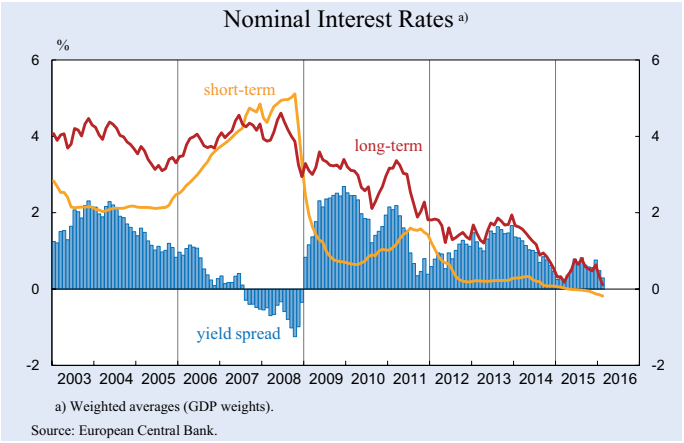
The Washington Post (2015), "How China Used More Cement in Three Years Than the US Did in the Entire 20th Century", http://www.washingtonpost.com/blogs/wonkblog/wp/2015/03/24/how-china-used-more-cement-in-3-years-than-the-u-s-did-in-the-entire-20th-century/.

Umweltbundesamt (2015), *Bodenerosion*, http://www.umweltbundesamt.de/themen/boden-landwirtschaft/bodenbelastungen/erosion.

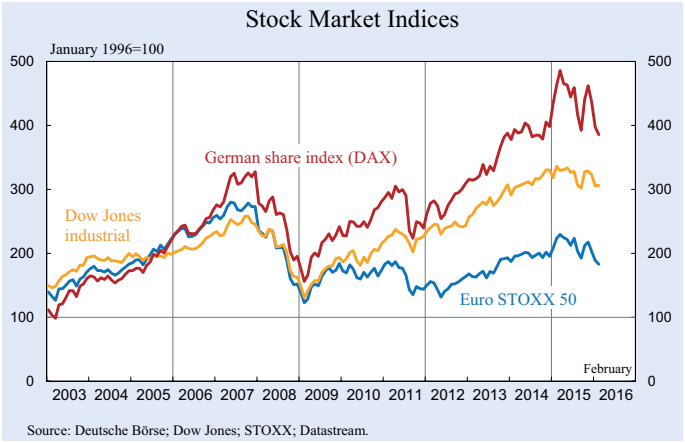
UNEP (2014), "Sand, Rarer Than One Thinks" *Global Environmental Allert Service*, March, https://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=110.

UNESCO (2009), *The Impact of Global Change in Erosion and Sediment Transport by Rivers: Current Progress and Future Challenges*, http://unesdoc.unesco.org/images/0018/001850/185078E.pdf.

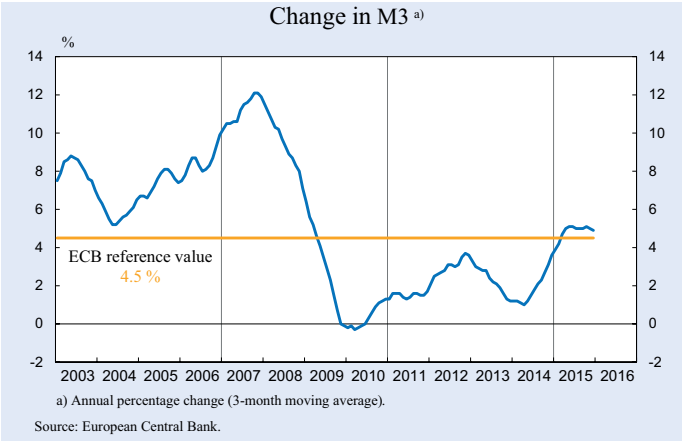
Financial conditions in the euro area



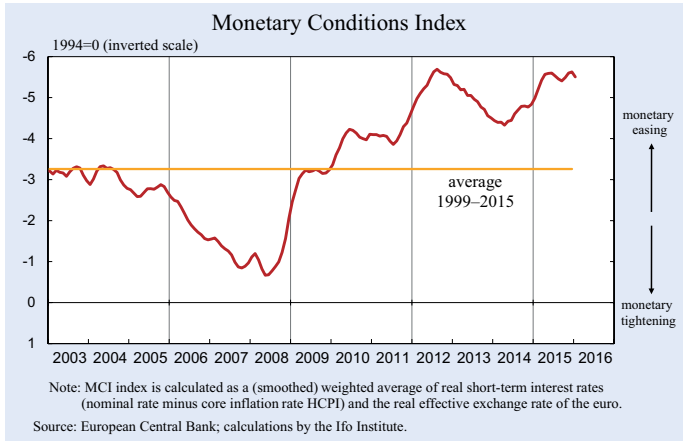
In the three-month period from December 2015 to February 2016 short-term interest rates decreased: the three-month EURIBOR rate declined from -0.13% in December 2015 to -0.18% in February 2016. The ten-year bond yields also decreased from 0.63% to 0.11% in the same period. The yield spread reached 0.29% in February 2016, down from 0.76% in December 2015.



The German stock index DAX decreased in February 2016, averaging 9,495 points compared to 10,743 points in December 2015. The Euro STOXX also decreases from 3,268 to 2,946 in the same period of time. The Dow Jones International declined as well, averaging 16,517 points in February 2016, compared to 17,425 points in December 2015.

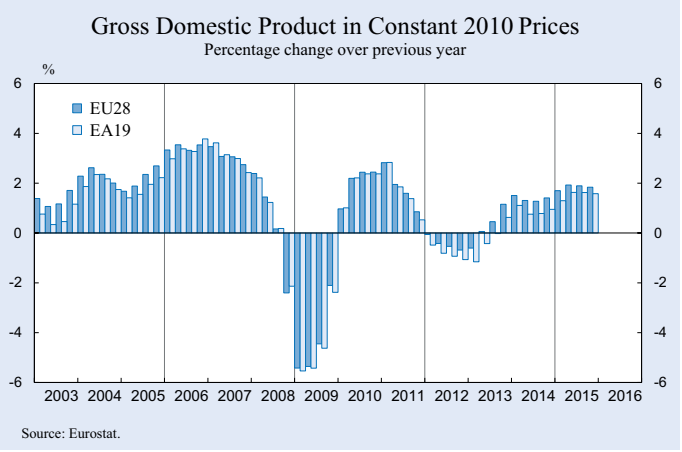


The annual growth rate of M3 increased to 5.0% in January 2016, from 4.7% in December 2015. The three-month average of the annual growth rate of M3 over the period from October 2015 to December 2015 reached 5.0%.

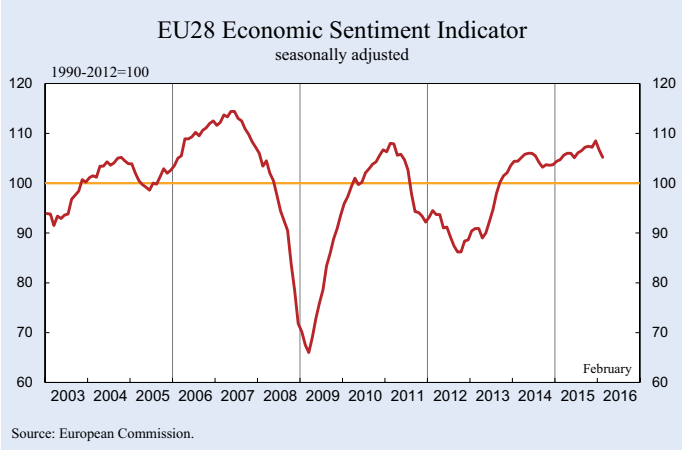


Between April 2010 and July 2011 the monetary conditions index remained rather stable. This index then continued its fast upward trend since August 2011 and reached its peak in July 2012, signalling greater monetary easing. In particular, this was the result of decreasing real short-term interest rates. In January 2016 the index started to slightly fall again while such minor fluctuations have been observed in last months.

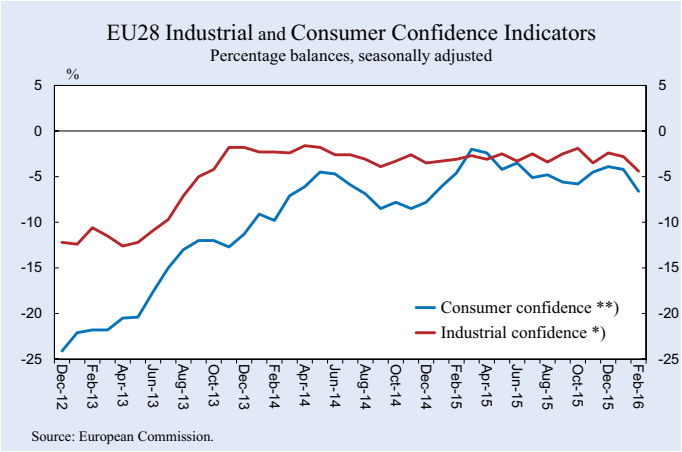
EU SURVEY RESULTS



According to the Eurostat estimates, GDP grew by 0.3% in the euro area (EA19) and by 0.4% in the EU28 during the fourth quarter of 2015, compared to the previous quarter. In the third quarter of 2015 the GDP grew by 0.3% and 0.4% respectively. Compared to the fourth quarter of 2014, i.e. year over year, seasonally adjusted GDP rose by 1.6% in the EA19 and by 1.8% in the EU28 in the fourth quarter of 2015.

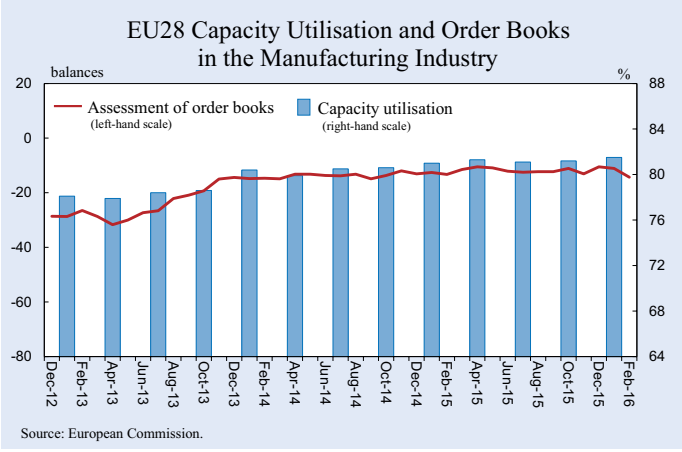


In February 2016 the Economic Sentiment Indicator (ESI) decreased in both the euro area (by 1.3 points to 103.8) and the EU28 (by 1.5 points to 105.2). In both the EU28 and the EA19 the ESI stands above its long-term average.



* The industrial confidence indicator is an average of responses (balances) to the questions on production expectations, order-books and stocks (the latter with inverted sign).
** New consumer confidence indicators, calculated as an arithmetic average of the following questions: financial and general economic situation (over the next 12 months), unemployment expectations (over the next 12 months) and savings (over the next 12 months). Seasonally adjusted data.

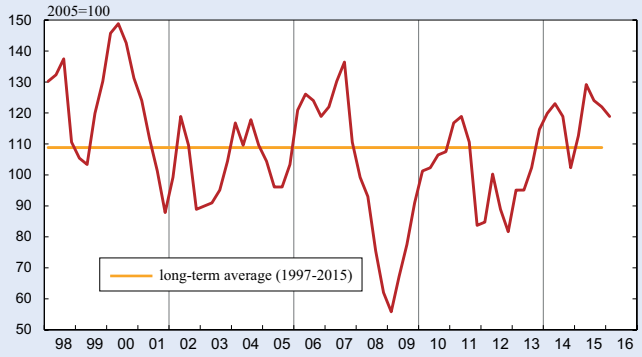
In February 2016, the *industrial confidence indicator* decreased by 1.6 in the EU28 and by 1.3 in the euro area (EA19). On the other hand, the consumer confidence indicator increased by 2.4 in the EU28 and by 2.5 in the EA19.



Managers' assessment of *order books* reached – 14.3 in February 2016, compared to – 11.1 in January 2016. In December 2015 the indicator had amounted to – 10.5. *Capacity utilisation* reached 81.5 in the first quarter of 2016, up from 81.2 in the fourth quarter of 2015.

Euro area indicators

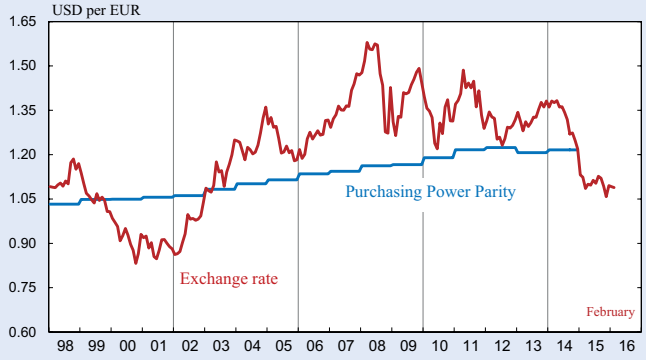
Ifo Economic Climate for the Euro Area



Source: Ifo World Economic Survey (WES) I/2016.

The Ifo Economic Climate Indicator for the euro area (EA19) declined by another three index points in the first quarter of 2016. It dropped to 118.9 points, but still remains significantly above its long-term average. Assessments of the current economic situation were only slightly less favourable than in the previous quarter, and positive expectations also clouded over somewhat. The recovery in the euro area economy is only expected to continue at a slow pace.

Exchange Rate of the Euro and PPPs

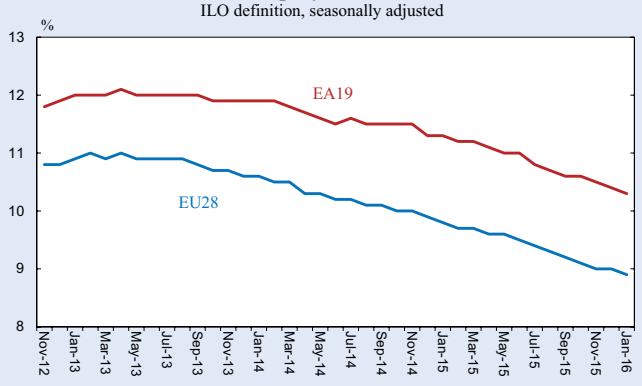


Source: European Central Bank; OECD; calculations by the Ifo Institute.

The exchange rate of the euro against the US dollar averaged approximately 1.09 $/€ between December 2015 and February 2016. (In November 2015 the rate had amounted to around 1.06 $/€.)

Unemployment Rate

ILO definition, seasonally adjusted

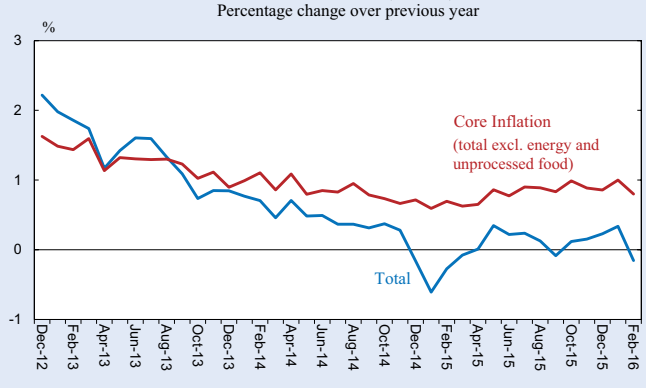


Source: Eurostat.

Euro area (EA19) unemployment (seasonally adjusted) amounted to 10.3% in January 2016, down from 10.4% in December 2015. EU28 unemployment rate was 8.9% in January 2016, down from 9.0% in December 2015. In January 2016 the lowest unemployment rate was registered in Germany (4.3%), the Czech Republic (4.5%) and Malta and Britain (5.1%), while the rate was highest in Greece (24.6%) and Spain (20.5%).

Inflation Rate (HICP)

Percentage change over previous year



Source: Eurostat.

Euro area annual inflation (HICP) was – 0.2% in February 2016, down from 0.3% in January 2016. A year earlier the rate had amounted to – 0.3%. Year-on-year EA19 core inflation (excluding energy and unprocessed foods) slightly decreased to 0.8% in February 2016, from 1.0% in January 2016.

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Business Surveys Division/WES
Poschingerstr. 5
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Germany

Tel +49-89-9224-1227
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