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The Business Cycle, Potential Output and the Output Gap: Different Theories, Different Rules

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Abstract

This paper presents some fundamental macroeconomic concepts and discusses how they fit with the existing fiscal rules if alternative business cycle theories are applied, and it considers how those rules can be improved in general and in the specific case of the Estonian economy.

This paper presents the views of the author and does not necessarily represent the views of the Estonian Fiscal Council or Eesti Pank.

I am grateful to Martin Larch for making the EFB proposal clearer and to economists at Eesti Pank for their comments. The usual caveat applies.

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1. What are these concepts in essence?

The output of an economy expands at different rates at different times and sometimes it contracts in fluctuations called business cycles. Economists working for universities and policy institutions believe that these fluctuations occur around an increasing level of output which is called potential output.

Levels of output below potential are inefficient as more output could be generated with the resources and technology available in the economy, but output above potential is also considered to be inefficient because achieving such a level might require inflation or the growth rate of wages to rise, and such rising rates are commonly believed to impose costs.

The output gap is defined as the difference between the actual level of output and its potential. The output gap is positive when an economy is running at above its potential level, and negative when it is below that level. It is thought to be most economically efficient to keep the economy as close to its potential as possible, and economic stabilisation policies are applied to achieve that.

Various different theories have been proposed to explain what causes business cycles. Some of those theories understand differently what potential output actually is and how it might be measured, and measuring potential output in different ways will give different estimates of the output gap.

This is important because although potential output and the output gap cannot be observed and measured directly, they play a fundamental role in assessing whether European Union (EU) countries are following the fiscal rules that are contained in the Stability and Growth Pact (SGP) of 1997 and the many reforms to it, and in national legislation.

2. How do these concepts relate to the fiscal rules?

The concepts of potential output and the output gap are fundamental for understanding whether the economy is expanding or contracting and, from this, for calculating the structural budget position, which is a central concept within the fiscal rules.

The 2005 reform of the SGP made the fiscal rules more flexible by shifting the focus away from the nominal budget position and onto the structural budget position. The nominal budget position is the difference between general government revenues and expenses as a ratio to the level of output. The structural budget position is calculated by removing the effects of the business cycle, temporary fiscal measures, one-off measures and other extraordinary factors from the nominal budget position.

When an economy is expanding, the revenues of the government usually increase as well, so if the effect of the business cycle is removed, a budget position that looks balanced would actually be in deficit. Equally, government revenues tend to fall and expenses to increase in an economic contraction as the bill for unemployment benefits and other payments rises. In this case, a large negative nominal budget position might prove balanced or even positive once the effect of the economic contraction is removed.

With the focus on the structural position, large nominal deficits can be tolerated in an economy that is in recession, while a budget surplus may be considered too small in an economy that is expanding. To understand whether the economy is expanding or contracting, we need to know what the potential output and the output gap are and how to measure them.

3. Are there specific rules about the structural budget position?

The general rule about the structural budget position for all EU countries is that they may not have a structural budget deficit above 0.5% of gross domestic product (GDP) if their stock of general government gross debt exceeds 60% of GDP, or above 1% of GDP if the stock of debt is equal to or lower than 60% of GDP.

Other rules, including national rules, might allow temporary larger structural deficits but then require a return to the general rule, or might further restrict the limit.

In Estonia the debt stock is by far the lowest in the European Union relative to GDP[1], but §6 (1) of the State Budget Act requires that the structural budget be balanced or in surplus, meaning the structural budget deficit cannot exceed 0% of GDP. The remainder of §6 of the act defines specific circumstances when a relaxation of the general principle is allowed.

Due to the covid-19 crisis, in late March 2020 the European Union has activated an escape clause that suspends the applicaton of the budget rules.

4. Why do countries need fiscal rules?

The fiscal rules are mainly contained in the Stability and Growth Pact of 1997 and subsequent EU legislation. The pact was reformed in 2005 to shift the focus of the rules to the structural position, so that countries in recession could be spared from having to apply the 3% limit rule for the nominal budget deficit so strictly. It was further reformed by the Six-pack of measures in 2011 and the Two-pack in 2013. The Six-pack contains five EU Regulations and one Council Directive, while the Two-pack contains two EU Regulations.

The general objective of the fiscal rules is "to ensure that countries in the EU pursue sound public finances and coordinate their fiscal policies" (see the European Commission website for the Stability And Growth Pact). In practice, this means guaranteeing the sustainability of public finances in the long run, pursuing countercyclical policies in order to stabilise output, and increasing the quality of public finances.

Sustainability and stabilisation mean that large stocks of sovereign debt should not be built up and fiscal policies should be followed that counteract the business cycle by containing economic expansions and moderating economic contractions. If these objectives are met it becomes possible and not excessively costly for countries to service their debt, economies become more efficient by preventing large fluctuations in them, and inflationary pressures are weakened by avoiding excessive spending (see Regulation (EU) No 473/2013).

The quality of public finances is an important condition for the growth of potential output, and it covers many different areas such as the composition of public finances, the structure and efficiency of the tax system, and the size of the government.

5. What is the most common understanding of the business cycle, potential output and the output gap?

It is generally accepted that economic activity is increased by expansionary fiscal policies of higher general government spending, lower taxes or both, and expansionary monetary policies like interest rate cuts by the central bank. This increase in activity might prevent the economy from contracting or make a

[1] In 2018, the debt stock was 8.4% of GDP; the second lowest debt-to-GDP ratio in the EU was of 21.0% in Luxembourg, or two and half times that of Estonia. Source: Eurostat.

recession less deep, or might equally make an economy move above its potential output. In a similar way, growth in the economy should be slowed by the opposite policies, such as interest rate rises. This general view of economic policies and their impact on the business cycle is shared by most economists.

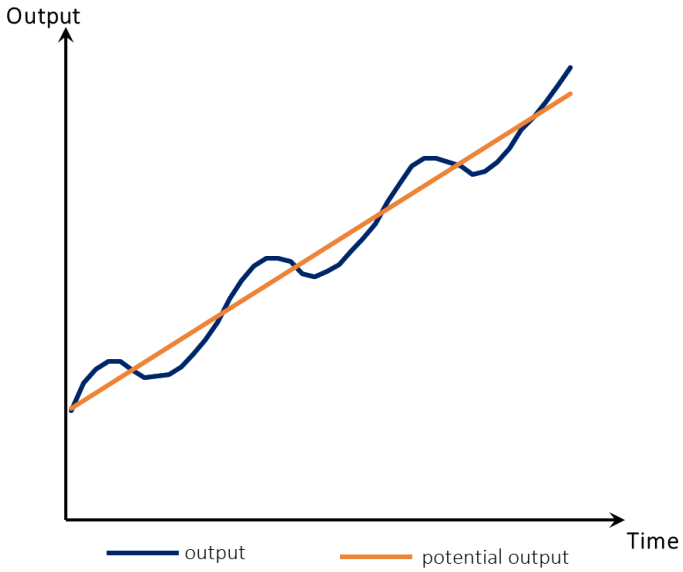
There is however an academic debate and a large and increasing amount of research about how exactly an expansionary policy increases economic activity or a contractionary policy reduces it. The link between the policy and its effects is the transmission mechanism, and different business cycle theories propose different transmission mechanisms.

The notion of the business cycle that many researchers and policymakers implicitly adopt assumes that fluctuations around potential output are more or less symmetrical (Aiyar and Voigts, 2019, and Dupraz et al., 2019), and so expansions above the potential level and downturns below it will on average tend to cancel each other out.

In this view, the standard theory, output gaps may be positive or negative and are zero on average.

Figure 1 illustrates the standard theory. The dark blue line represents output and the orange line is potential output. Areas that are above the orange line but below the dark blue one are positive output gaps, while the areas below potential output and above output are negative output gaps.

Figure 1. Standard Business Cycle Theory



Keeping everything else the same, larger output gaps imply a lower structural budget position, meaning they make it more difficult to respect structural budget rules. If past output gaps are later revised upwards, it might turn out that a country previously thought to have followed the structural budget rule did not in fact do so.

Revisions of estimates of the output gap may be especially significant in small and very open economies like Estonia, where real-time output measurements are relatively harder to make because the economy is more volatile and it is particularly difficult to assess the level of capacity utilisation.

6. Are there any alternative understandings of the business cycle, potential output and output gap?

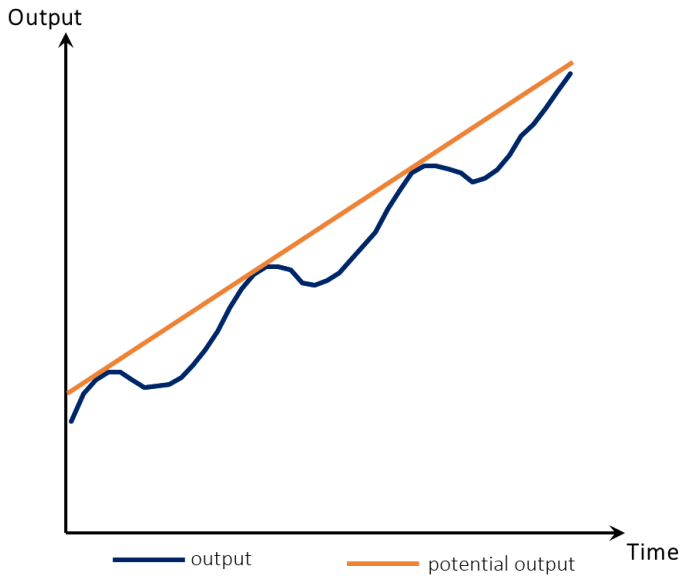
Milton Friedman advanced an alternative theory called the plucking theory of the business cycle[2]. He compared the economy to "an elastic string stretched taut between two points on the underside of a rigid horizontal board and glued lightly to the board"; this string was then "plucked at a number of points chosen more or less at random with a force that varies at random, and then held down at the lowest point reached" (Friedman, 1964). The final result would be a line with ups and downs representing the business cycle and similar to the picture in Figure 2.

In this theory, all the fluctuations in output occur below the potential level. Over a business cycle the economy contracts below its potential level and in the subsequent expansion it returns to that potential level but does not move beyond it. In this theory, output gaps can only be negative.

The theory was not formalised as a set of equations by Friedman, but was presented as a simple way to explain the shape seen in a plot of US output data. Friedman used correlations and statistical tests to show that this theory provided a better fit for the data than did the theories that assumed output symmetry around a trend.

Plucking theory is illustrated in Figure 2. The areas below the orange line and above the dark blue line represent negative output gaps.

Figure 2. Plucking Theory of the Business Cycle



Some econometric and theoretical models have been inspired by plucking theory (Kim and Nelson, 1999, Sinclair, 2010, Aiyar and Voigts, 2019, and Dupraz et al., 2019). Each of them explains why many aspects of the business cycle and many macroeconomic variables display some form of asymmetry. Examples of this asymmetry are that downturns tend to be sharp and fast while recoveries tend to be long and slow; the distribution of the unemployment rate is not symmetrical around its mean but is instead skewed to the right; and wages, prices, employment and output are all asymmetric over the business cycle[3].

[2] Milton Friedman was a professor of economics who worked mostly at the University of Chicago and who won the Nobel Memorial Prize in Economic Sciences in 1976. The plucking theory is expounded in Friedman (1964 and 1993).

[3] These business cycle properties have been found in the data of the US and of other large developed economies. See among many others Kim and Nelson (1999), McKay and Reis (2008) and references therein, Abbritti and Fahr (2013), and Dupraz et al. (2019).

The different models use different mechanisms to generate business cycle fluctuations, and they are better able to explain the data than models which assume symmetry in macroeconomic phenomena are.

7. Do the different business cycle theories change decisions about which economic policy should be followed and how the fiscal rules should be applied?

Different business cycle theories imply different optimal economic policies. Which stabilisation policy suits best for the objective of guaranteeing efficiency over the business cycle can be very different under different theories.

The traditional view of the business cycle is that a contractionary policy should be deployed during an economic expansion when output is believed to be moving above its potential, but in direct opposition to this, plucking theory argues against contractionary policies because the economy cannot possibly be above potential.

Equally, policymakers may let a growing economy cool down if it is perceived by the standard view of the business cycle to be above its potential, but plucking theory suggests that an economy may receive stimulus even when growth is strong, so that it can return faster to its potential level.

Furthermore, the welfare gains from stabilisation policy are likely to be significantly larger under plucking theory than is usually thought (Dupraz et al., 2019). Under the standard theory, stabilisation improves welfare because it reduces the volatility in output, which is akin to reducing risk. However, since output gaps are zero on average, reducing the size of those gaps does not raise average output. In plucking theory, output gaps are on average negative, and so welfare gains arise not only from reduced volatility but also because stabilisation raises average output[4].

Applying the fiscal rules might be counterproductive if the true business cycle position is weaker than the estimate from the standard theory. In this case, a policy that respects the fiscal rules might act against the objectives of the fiscal rules themselves. This probably happens more commonly than is generally realised because the methods usually used to estimate the business cycle position have a systematic upward bias[5].

If the economy can only be at or below potential output, then any measures to cool the economy down might lead to inefficiency and make it harder to keep debt sustainable, might be deflationary, and might make it harder to respect the 3% nominal deficit rule.

Under plucking theory, any policies aimed at reducing economic activity because output is supposedly above potential are harmful.

8. If contractionary policies might be harmful does that mean we do not need any fiscal rules?

Whichever theory is followed, the general objectives of sustainability of public finances, stability of output, and quality of public finance remain the same. Plucking theory does not argue that an ever growing debt-to-GDP ratio does not pose risks to the economy or that the quality and composition of public investment is not important.

[4] There is a third channel through which stabilisation policy may lead to an increase in welfare. According to the notion of hysteresis, unemployed workers may become discouraged and their skills may decay as they remain unemployed for longer, and so they may not be able to find a job any more or be as productive as they were before they lost their jobs. This means that a recession might have a permanent negative effect on potential output. Stabilisation policy may prevent this problem if it is able to shorten a recession or make it less deep. See Blanchard and Summers (1986).

[5] This problem affects not only filter-based methods such as Hodrick-Prescott filtering but also production-function based methods (Aiyar and Voigts, 2019).

This means that the need for fiscal rules and other mechanisms such as independent fiscal institutions remains. Rules and institutions are needed if policymakers are to deliver the policies that will achieve the general objectives of public finance.

However, the rules may need to be revised even as they keep the same objectives. One way to do this is to make them consistent with one particular theory, but another is to revise them so that their application is independent from any theory.

9. Which theory should we follow?

The standard theory is by far the most popular among economists and policymakers. However, plucking theory has been revived in recent years because it seems to explain better the economic recovery in the euro area and the USA before the covid-19 pandemic. Until the onset of the pandemic, the euro area had been recovering from recession since the first quarter of 2013 (CEPR and EABCN, 2019), while the US began its recovery in the third quarter of 2009 (NBER, 2010).

Output had been growing for a long time in both regions without any sign of inflation rising. Inflation has actually remained relatively low since the beginning of the recovery in both cases and still is. In addition, the estimates of the output gap from standard theory have been positive in the USA since the first quarter of 2018 and in the euro area since 2016[6] and until the current crisis.

All this evidence together contradicts the standard model of the macroeconomy, which predicts that a growing economy with a positive output gap should experience a rise in inflation.

Plucking business cycle theory meanwhile can explain a long recovery with persistently low inflation. This occurs because the economy can grow for a long time but still remain below potential. As the cyclical growth is caused by increased use of resources, there is no upward pressure on prices.

Many economists have defended the standard theory by claiming that there has been a change in the relationship between the rates of unemployment and inflation. They argue that the inflation rate should still rise when the unemployment rate falls, but this negative relationship now becomes significant at lower rates of unemployment than before.

Benoît Cœuré (2019), a former member of the Executive Board of the ECB, claims that there have been structural changes in the world economy that have helped alter the relationship between inflation and unemployment and are preventing inflation from rising. Those changes include the apparently permanently low oil price, a decline in the bargaining power of workers, and increased market competition for output as a consequence of the ongoing processes of digitalisation and globalisation.

So plucking theory may appear to provide a better explanation than the standard theory for some of the most important macroeconomic events of recent years in the euro area and the USA but the standard theory can cite in its defence some of the major changes in the world economy.

10. What about Estonia? Does plucking theory also work well for Estonia?

It is debatable which theory performs best for Estonia, or for Latvia.

Plucking theory does very well at explaining the very fast recoveries in Estonia and Latvia after the previous crisis. One of the corollaries of the theory is that the depth of a recession is a good predictor of

[6] For the USA see https://fred.stlouisfed.org/graph/?g=fxSX. The data for the euro area are annual; see series 6.6.2 in https://ec.europa.eu/economy_finance/ameco/user/serie/ResultSerie.cfm.

the strength of the subsequent recovery, so a deep recession should be followed by a strong recovery. This pattern matches the recent experience of Estonia and Latvia, but it is not incompatible with the standard theory.

Prices show there to have been some periods of growth in output coupled with rising inflation in Estonia and in Latvia. Inflation was rising in Estonia in 2007, a year of strong growth in real output, and again from late 2009 to late 2010 and from April 2016 to November 2017, which were periods of economic recovery[7]. The estimate of the output gap was positive only in the first of those three periods[8]. All this evidence is consistent with standard macroeconomic theory, which predicts an association between strong growth and rising inflation in a recovery from a recession, when the output gap is negative, and at times when growth is above potential, when the output gap is positive.

The corollary of the plucking theory was used by Dupraz et al. (2019) to test plucking theory itself using US unemployment data, and they found strong support for the theory in those data. Sandri (2019) used data from other advanced economies and found some support for plucking theory. Such support may or may not be found when using data from other countries such as Estonia.

There is uncertainty about which theory is best at explaining the economy, and it is not clear whether the same model is the best for each and every economy.

11. Since there is uncertainty about which theory best explains the economy, what should countries do, particularly one like Estonia with a small, very open and very volatile economy?

Uncertainty about the theories is the same as uncertainty about how the real-life macroeconomy actually works.

If the standard business cycle model is followed and the output gap from that model is estimated to be positive, then the conclusion is that the economy is expanding to above its potential and some contractionary policy is desirable. However, if the economy can be best described by plucking theory, then a contractionary policy may actually push the economy into recession or, at least, delay progress towards potential.

This uncertainty about the functioning of the economy suggests that policymakers should be very cautious about contractionary policies[9]. Output gaps might not be symmetrical and negative output gaps are likely to be more common than positive ones, so stabilisation policy should not be neutral on average, with the stimulus during a recession about equal in size to the contractionary policy during an expansion, but should instead be expansionary on average over the business cycle in a stabilising way[10].

Being very cautious about contractionary policies does not imply being lax about expansionary policy though. The potential risks from excessive debt and the inefficiencies from low quality public finance such as investment in unnecessary infrastructure do not change.

Furthermore, fiscal expansions may lead to different problems such as excessive capital and labour being allocated to non-tradable sectors, unsustainable booms being aggravated, and competitiveness being lost

[7] Annualised monthly data show the difference between the highest and lowest inflation rates was 7 percentage points in 2007, 7.5 in 2009-10, and 4.5 in 2016-17. Source: Eurostat.

[8] The output gap was calculated as the "gap between actual and trend gross domestic product at 2015 reference levels". Source: AMECO.

[9] Many economists point to the contractionary measures of the European Central Bank in 2011 as a cause of the double-dip recession in the euro area. In 2011, the European Central Bank raised interest rates twice. See The Economist (2019).

[10] Aiyar and Voigts (2019) claim that "[t]here is no theoretical reason to insist that positive deviations from potential output must always equal negative deviations over time, that is, that the mean output gap must be zero" and that "overemployment" is mostly a purely theoretical concept with almost no correspondence in the real world.

to wage and price growth. This last problem is particularly difficult to correct when a country is part of a monetary union, meaning it cannot regain competitiveness by cutting its exchange rate.

A fiscal expansionary policy may also be ill-advised in a country in a monetary union if the common monetary policy that is set for the whole union is too loose for that country.

In a small and very open economy like that of Estonia, fiscal policy may not be very effective at stimulating the economy because a significant portion of the extra spending generated by the stimulus will go on purchases of imported goods and services.

With these caveats in mind and noting that the economy may recover fully to its potential level even without any stimulus, plucking theory nevertheless gives expansionary policy the very important task of increasing the average level of output[11].

Beyond these theories, any economic context that makes it hard to cut nominal wages generally suggests that expansionary policy has an important role during recessions. This problem of downward nominal wage rigidity may arise if, say, a large proportion of workers have contracts that are negotiated only once per year.

12. Since economic theories generally seem to favour expansionary policies over contractionary policies and recommend great caution about contractionary policies, should fiscal rules not be revised?

Fiscal rules require countries to restrict their structural budget deficit to a certain low level over the medium term, to keep their nominal budget position below 3% of GDP, and to reduce their debt-to-GDP ratio if they have high levels of debt. All these requirements point to a need for policies of consolidation, such as raising taxes and cutting public expenditure, which are contractionary policies. Theory says that policymakers should be very cautious about such policies[12].

There is an ongoing debate about revising the fiscal rules of the EU that involves academics, policymakers and the institutions of the EU[13]. Following a request from the President of the European Commission, the European Fiscal Board (EFB) published a report about the EU fiscal rules and how they could be simplified (EFB, 2019).

The report argues that fiscal rules have had some success in promoting sustainability but have not contributed much to the objectives of output stabilisation and quality of public finances.

It claims that the rules have not prevented pro-cyclical policies that make output more volatile, going counter to stabilisation, and that the rules have not incentivised enough the countercyclical policies that bring stabilisation.

The report concludes from this and other findings that the fiscal rules need to be simplified while the focus should remain on the objective of long-term sustainability for government debt. The proposed simplification is that only one fiscal indicator, net primary expenditure, should be used, as it is a measure of government spending that excludes debt servicing costs and is net of discretionary revenue measures.

[11] The plucking theory model not only favours expansionary policies but also advocates for a less restrictive macroeconomic environment. An example is the suggestion of raising the inflation rate target from 2% to 4% (Dupraz et al., 2019). With a higher inflation target, it would be easier for the economy to recover in the absence of any economic stimulus.

[12] The damaging effects of applying austerity policies in countries with very weak economies have been pointed out many times. The caution about contractionary policies, however, applies not only to weak economies but in general.

[13] See for example IFO (2019).

The growth of net primary expenditures would be limited for countries with a debt ratio above 60% of GDP so that the debt ratio would eventually reach or fall below 60% of GDP. The limit would depend on the trend rate of potential output growth (EFB, 2019 section 6.3). Calculation of this trend is less dependent on theory and less prone to error than the calculation of the level of potential output for each separate time period. Equally, the trend growth rate for potential output is not as subject to revision as the level of potential output is (Darvas et al., 2018).

Countries that already have debt ratios below 60% of GDP, like Estonia, would not be limited by the net primary expenditure rule but would be required to continue to stick to the limit of 3% of GDP for the nominal deficit[14].

This proposal notably leaves aside the concepts of the output gap and the structural budget position. As stated before, the sizes of the output gap and of the structural budget position are not observable but must be estimated, and those estimates depend on which business cycle theory is chosen and are subject to large revisions (Darvas et al., 2018). Instead, the net primary expenditure rule and the nominal deficit rule use observable quantities that are independent from theory. This gives the proposed simplification of the fiscal rules the advantage of being robust to whichever business cycle theory is chosen. The proposed simplification is theory-neutral and so using it does not require a difficult choice to be made between alternative theories.

The proposal is also interesting because its almost exclusive focus on the objective of debt sustainability may give sufficient leeway for governments to set their fiscal policies to suit their views on macroeconomic conditions and on which theory best applies to them. Countries with low debt will have more room for fiscal manoeuvre under the proposal than they have under the current rules, while high-debt countries may have more or less leeway than under the present rules depending on how quickly they meet the objective of a 60% debt ratio under the proposed rule.

However, the proposed revision of the fiscal rules to focus almost exclusively on the objective of debt sustainability does not seem to address the incentives to implement adequate stabilisation policies. While pro-cyclical fiscal contractions seem less likely to occur under the proposal, pro-cyclical fiscal expansions may become much more tolerated.

13. Should there then be new rules that encourage adequate stabilisation policies?

While the objective of debt sustainability has been central for a large number of countries in the euro area for the past decade and before, it is of very little relevance to Estonia, where general government gross debt is well below the limit of 60% of GDP (see footnote 1).

This makes it advisable to give more attention to a fiscal framework that puts more weight on the objectives of macroeconomic stabilisation and higher quality for public finances. This is especially important for countries with low levels of public debt.

However, it is not an easy task to design rules that incentivise the appropriate macroeconomic stabilisation and at the same time are robust to different macroeconomic theories, while still providing sufficient room for governments to achieve their specific economic objectives. Such a task will certainly require a lot of work from both policymakers and researchers.

It is very relevant for Estonia to focus on output stabilisation. There is some evidence that fiscal policy has been pro-cyclical in Estonia in recent times (see Fiscal Council, 2019), but an inaccurate estimate of the output gap coupled with the current structural budget position rules, which might be too strict, may lead

[14] While a limit above 3% may be too high for debt sustainability it might be too low for the stabilisation policy needed in a very pronounced recession.

to ill-timed contractionary policies. Before the covid-19 crisis, the estimates of the Estonian output gap were positive (see Fiscal Council, 2019) but there were also some signs of economic weakening (see Eesti Pank, 2019).

Incentives for better stabilisation policies may be provided at the national level but it could be helpful if such incentives also came in a framework from the European Union. This framework would become more important under the EFB proposal because countries with low debt would have more leeway to choose their fiscal policies.

14. Should more attention not be given to the objective of quality of public finances alongside stabilisation?

The SGP and related legislation mainly address the objective of the quality of public finances through country-specific recommendations that are first proposed by the European Commission and are then adopted by the Council of the European Union. These recommendations mostly look at aggregate fiscal quantities though, and point to general economic objectives in a relatively vague way, and they are not intended to establish standards for the quality of public finances[15].

Providing incentives for quality public finances is also of great importance for Estonia at a time when large government investments are being planned in sectors like transport (Rahandusministeerium, 2019).

A normative framework that is in line with the general objectives of the SGP and the subsequent EU legislation should incentivise projects that contribute to the long-term growth of the economy. This contribution should be assessed by objective, rigorous and independent analysis. The framework should equally block projects that fail the positive net present value test.

Blocking projects that are unnecessary is not only valuable for economic efficiency and long-term growth but may also promote the appropriate stabilisation of output by stopping government spending being concentrated in a short period of time.

Furthermore, and in line with the conclusions of the Fiscal Council (2019), attention should be paid to the comparative evaluation of the different ways a project can be funded and delivered, such as traditional public procurement and public-private partnership (PPP)[16]. Comparison of the options should be a requirement for large projects and the government should be encouraged to choose the option that offers the best balance between costs and risk.

A normative framework for the quality of public finances can draw inspiration from two very good sources. One is the Public Investment Management Assessment (IMF, 2019) that the International Monetary Fund (IMF) carried out for Estonia. The other is the report by the National Audit Office of Estonia on planning and managing public investments (Riigikontroll, 2020).

Both documents identify many weaknesses in the planning and management of public investments in Estonia and make many recommendations, and there is a significant overlap between the two reports. The following were among the recommendations:

- the legal requirement that large projects with EU co-funding be comprehensively appraised should be applied to nationally funded projects as well;
- comprehensive project appraisal should be standardised for all ministries;

[15] An example of general and vague language can be found in the latest country recommendation for Estonia (European Commission, 2019): “Take measures to reduce the gender pay gap, including by improving wage transparency”.

[16] The OECD (2010) classifies different arrangements of public and private participation in projects by the share of risk that falls on the government. In descending order those arrangements are complete government production and delivery, traditional public procurement, public-private partnership, concession, and privatisation.

- project appraisal itself should be evaluated by independent and external experts;
- public investments should be subject to 15-year cross-sector plans covering aspects ranging from financing to implementation to evaluation;
- there should be systematic identification, monitoring and reporting of the fiscal risks and the contingent liabilities associated with PPPs, state-owned enterprises and projects carried out by local governments;
- nationally funded projects should be "subject to a stringent set of selection criteria" (IMF, 2019) and these criteria should apply across sectors;
- small and medium-sized projects should be subject to rigorous assessment;
- the socio-economic impact of completed projects should be evaluated;
- ministries should collect "detailed information on investments made by companies, foundations and public universities" (Riigikontroll, 2020);
- there should be a database of all the public investments that are funded at the national level;
- there should be a centralised overview of projects in progress;
- the planning stage must be strengthened as cost overruns and delays are in large part the result of poor planning.

These recommendations together with a rule requiring positive net present value may form the backbone of the proposed normative framework for the quality of public finances.

15. These recommendations for the quality of public finances seem essential but should the European Union be making these rules?

Like the incentives for an adequate stabilisation policy, guarantees for the quality of public finances can come from a national normative framework alone, but support from the European Union might equally be helpful. Specific risks that are associated with large investments, like political opportunism, capture of the decision process by private or local interests, corruption, damage to the environment, improper cost-benefit analysis, or cost overruns and delays, might be tackled much better with assistance from the European Union.

Establishing rules at the EU level might safeguard them from normative instability and political opportunism. However, the EU may not have the tools needed to guarantee that the rules are actually followed and to impose consequences if they are breached. Creating new EU rules is also a very long and contentious process, so the defence against the risks to large investments may need to be guaranteed by institutions and a normative framework at the national level, at least for the time being.

16. How does the coronavirus crisis affect the analysis in this paper?

This paper was mostly completed in late February 2020, when the full extent of the economic consequences of the covid-19 pandemic were not yet clear. They still are not clear in July 2020 and it is not possible to know with any certainty how long and how deep the current economic crisis will be.

The European Union fiscal rules have been suspended for the time being so that governments have the freedom needed to react to the crisis with sufficient fiscal firepower. It is not known when, or even if, the fiscal rules will be put back in place. Mário Centeno, the former president of the Eurogroup of euro area finance ministers, has recently called for a rethink of the fiscal rules (Financial Times, 2020). Niels Thygesen, chairman of the European Fiscal Board, has also questioned whether the fiscal rules are

adequate for their purpose and has argued that they should remain suspended next year (Financial Times, 2020). What is known with certainty is that debt-to-GDP ratios will rise in 2020.

These circumstances make the call for a revision of the fiscal rules and the other opinions in this paper still more relevant. Not only it is advisable that the fiscal rules be changed by dropping the reference to the structural budget position and by focusing on net primary expenditure, but it has also become very topical to discuss the target of the debt-to-GDP rule itself. The chairman of the EFB considers the threshold of 60% of GDP to be unrealistic (Financial Times, 2020).

Stimulus packages with large increases in government spending are under discussion or are already being deployed at the European Union level and also at the national level. The increase in government spending calls for greater scrutiny of the quality of the projects that will be funded. It also calls for greater care in how the long-term impact of those projects on the sustainability of public finance is evaluated.

It is also crucial that the fiscal rules not be reactivated prematurely. Applying consolidation policies while the economy is still weak would be counter-productive for sustainability and stabilisation.

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