

Em Análise

Effects of National Reform Programme measures on productivity

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Introduction

The importance of measure and understand productivity dynamics is on the agenda of both international and national organizations. Following one of the proposals presented in the 5 Presidents' Report, the Council of the European Union issued a Recommendation for the euro area Member States aiming to identify or create national productivity councils to analyse developments and policies on productivity and competitiveness, and to contribute for national promotion of the reforms needed to ensure sustainable economic growth and convergence. In Portugal, the Council for Productivity was established in March 2018, by a joint dispatch from the Minister of Finance and the Minister of Economy, and published its first report a year later, identifying the main determinants of productivity and exploring a broad range of indicators useful to properly analyse productivity developments in the country.

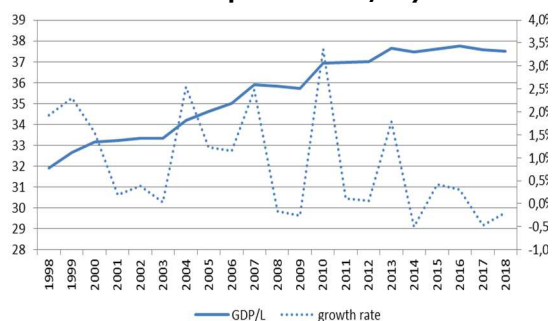
On the same vein, structural reforms and its impact continue to be an important topic for policy makers. Their contribution to the increase of potential output and productivity were studied by various authors (see, for instance, Gouveia and Fernandes, 2017, Gouveia et al., 2017, Monteiro et al., 2017) and a recent survey for Portugal concluded that, in general, there are positive effects resulting from the structural measures implemented in the country (Fernandes et al., 2018).

The National Reform Programme (NRP) presented an exercise where the long-term impacts of selected measures are estimated on macroeconomic variables such as GDP and employment, among others. In order to joint both areas of research, this work uses the calculations made in the scope of the 2019 NRP and analyses the effects of the measures implemented in terms of labour productivity and total factor productivity. It started by explore the latest developments of some productivity measures, then it presents the impacts of NRP's measures on these variables and, finally, it features some conclusions.

Latest developments on productivity dynamics

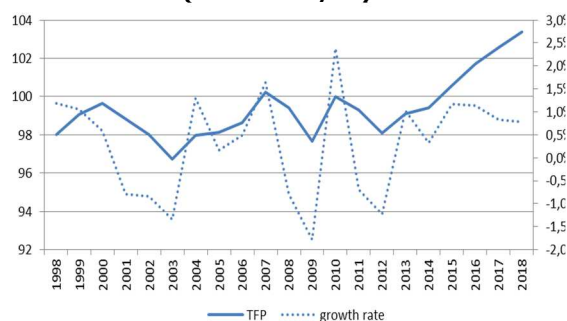
Using AMECO data, this section shed some lights on the latest developments regarding productivity measures.

Figure 1 – GDP per person employed (EUR, constant prices 2010/%)



Source: AMECO and author calculations

Figure 2 – Total Factor Productivity (2010=100/%)



Source: AMECO and author calculations

GDP per person employed has increased over the period analysed with some decreases registered after the financial crisis of 2008 and in 2011-2012, 2014 and 2017. The trend registered after the crisis was smaller than in the period before, reflecting a decline in GDP

¹ GPEARI/Ministry of Finance. The opinions expressed are those of the authors and not necessarily of the institution. Any errors or omissions are the authors' responsibility.

growth bigger than the one registered for employment. In 2013, both variables started to grow, resulting in a small positive trend until 2018.

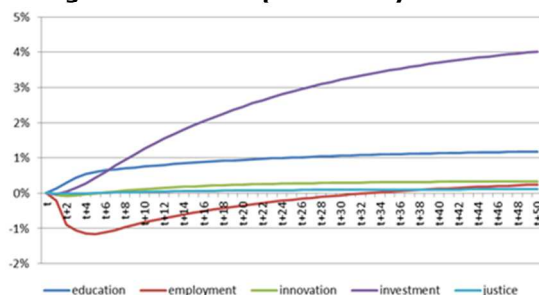
Regarding the total factor productivity, according to Figure 2, there was a stagnation of TFP from 1998 until 2013, with some small deviations, and it began to register a positive trend in 2012, right after the economic crisis. The value registered for 2018 is the highest from the period analysed. This could be a signal that the economy is now globally working in a more efficient way, possibly given the reforms implemented during the Adjustment Programme.

Effects of measures on productivity

The 2019 National Reform Programme presented the structural strategy for Portugal economic and social policy to the period of 2019-2023. Using QUEST III² and from the broad range of measures included in the document, it was possible to estimate the impact of 5 different areas of action: education, judicial system, innovation, investment and employment.

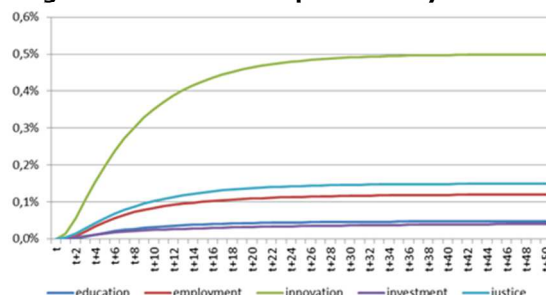
In the area of education, based on the goal to reduce dropouts and failure rates, it was estimated the effect of reaching a ratio of low-skilled of 50% by 2020. On judicial system, it was estimated the impact of the reduction in terms of disposition time. Regarding innovation, it was estimated the impact of the increase in the scientific employment registered until 2019. In what concerns investment, the total availability of funds directed to a large range of programmes was taken into account. Finally, for employment, the impact was estimated taking into account the increase of the employment registered until 2019 resulting from the employment programmes put in place³.

Figure 3 – Labour productivity effects



Source: author calculations based on QUEST III estimations

Figure 4 – Total factor productivity effects



Source: author calculations based on QUEST III estimations

As presented in Figure 3, the majority of the measures are expected to have a positive impact on labour productivity. Given the considerable boost in investment, the measures directed to increase it are the ones with the highest impact. In fact, increasing investment will allow firms to produce more given the same resources in terms of labour, increasing substantially the labour productivity (4% in the long-run). Education also has a considerable effect, around 1% in the long-run, given its effect on the human capital availability. As expected, the increase in employment starts by deteriorating the labour productivity but has a long-term positive effect.

As expected, the measures that affected more the TFP developments are the ones related to innovation. The increase of the R&D employment will bring knowledge increases to firms and the share of the R&D activities in the total economy, bringing technological developments. Justice and employment areas of reform also increase TFP. The reduction of low-skilled workers brings technological increases in the productive process while justice measures improve the business environment, allowing firms to invest more easily, namely in R&D. Despite lower, investment and education reforms also result in gains in terms of TFP. As expected, the effects

² QUEST III is a dynamic stochastic general equilibrium (DSGE) model, with micro-foundations that result from the aggregation of the optimal decisions of a broad set of agents, operating in a context of frictions in the financial, product and labour markets. See Roeger et al., 2008 and Varga et al. 2013.

³ For more details about the rationale behind the estimations and the measures corresponding to each area please see Gouveia and Fernandes (2017) and Programa Nacional de Reformas 2019-2013.

on TFP take some time to show, with the long-terms effects being much higher than the short-term ones.

Conclusions

According to our estimations, the reforms presented in the National Reform Programme will have positive and considerable effects both in terms of labour productivity and total factor productivity. Investment measures strongly impact labour productivity while innovation measures have the most significant effect on TFP.

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Annex

| Área de reforma | Breve descrição da medida | Técnica de modelização | Principais hipóteses de estimação | Elementos quantitativos | | | |
|------------------|--|--|---|---|-----------|-----------|-----------|
| | | | | Resultados das simulações macroeconómicas (impacto face a um cenário base sem reformas) | | | |
| | | | | Variável | t+10 anos | t+20 anos | t+50 anos |
| Educação | <ul style="list-style-type: none"> - Promoção da generalização do ensino secundário enquanto patamar mínimo de qualificações - Modernização do sistema de ensino - Promoção do sucesso escolar e reforço de apoios a estudantes carenciados | Modelo Dinâmico Estocástico de Equilíbrio Geral (DSGE) - QUEST III com crescimento endógeno (ver Roeger, Varga e Veld, 2008) | Reforma modelizada através da redução do peso dos trabalhadores com baixas qualificações (e correspondente aumento do peso dos trabalhadores com qualificações médias), de modo a atingir o objetivo estipulado para 2020 quanto ao peso da população com o ensino secundário completo (50%). | PIB | 1,71% | 1,91% | 2,15% |
| | | | | Consumo privado | 1,28% | 1,41% | 1,56% |
| | | | | Investimento | 1,19% | 1,38% | 1,62% |
| | | | | Exportações líquidas (% do PIB) | -0,75% | -0,61% | -0,33% |
| | | | | Emprego | 0,69% | 0,70% | 0,71% |
| | | | | PIB | 0,05% | 0,09% | 0,12% |
| Sistema Judicial | <ul style="list-style-type: none"> - Reforçar a capacidade dos meios de Resolução Alternativa de Litígios - Melhor gestão pelos órgãos de gestão das comarcas e aplicação de soluções diversificadas de acesso ao tribunal - Reforço da capacitação dos Administradores Judiciais e introdução de medidas de promoção da celeridade e resolução processual nos processos de insolvência e reforço das medidas de fiscalização | Modelo Dinâmico Estocástico de Equilíbrio Geral (DSGE) - QUEST III com crescimento endógeno (ver Roeger, Varga e Veld, 2008) | A redução prevista em termos de <i>disposition time</i> é traduzida numa variação da taxa de entrada de novas empresas, de acordo com a elasticidade estimada em Comissão Europeia (2015). Os custos de entrada do modelo são depois calibrados para essa taxa de entrada. | Consumo privado | 0,02% | 0,05% | 0,07% |
| | | | | Investimento | 0,01% | 0,05% | 0,09% |
| | | | | Exportações líquidas (% do PIB) | 0,19% | 0,01% | -0,03% |
| | | | | Emprego | 0,01% | 0,01% | 0,01% |
| | | | | PIB | 0,14% | 0,26% | 0,36% |
| | | | | Consumo privado | 0,10% | 0,19% | 0,26% |
| Inovação | <ul style="list-style-type: none"> - Contratação de jovens docentes/Investigadores doutorados pelas instituições de ensino superior - Reforço dos humanos altamente qualificados dos centros tecnológicos ou outros "laboratórios colaborativos", das empresas e dos centros de I&D - Promover o aumento da competitividade pela integração de pessoal qualificado nos centros de interface tecnológico | Modelo Dinâmico Estocástico de Equilíbrio Geral (DSGE) - QUEST III com crescimento endógeno (ver Roeger, Varga e Veld, 2008) | O modelo é calibrado, através da variável subsídios ao setor de I&D, de modo a ser alcançado o impacto da criação de emprego científico registada até 2019 (€101). | Consumo privado | 0,10% | 0,19% | 0,26% |
| | | | | Investimento | 0,01% | 0,16% | 0,26% |
| | | | | Exportações líquidas (% do PIB) | 0,56% | 0,04% | -0,07% |
| | | | | Emprego | 0,01% | 0,01% | 0,01% |
| | | | | PIB | 0,14% | 0,26% | 0,36% |
| | | | | Consumo privado | 0,10% | 0,19% | 0,26% |
| Investimento | <ul style="list-style-type: none"> - Programa Indústria 4.0 - Reforçar o acesso a redes de banda larga - Programa orientado de atração de projetos-âncora para as atividades de inovação - Programa Interface - Alargar a base exportadora do país - IFRRU 2020 - Reabilitar para arrendar - Casa Eficiente - Tratamento mecânico e biológico de resíduos urbanos - SIGRE - Valorizar o potencial económico do interior - Apostar na Aquicultura - Apoiar os custos de arborização e prevenção e reparação das florestas - Apoiar investimentos no aumento da resiliência e do valor ambiental dos ecossistemas florestais e melhoria do valor económico das florestas - Apoiar os investimentos em tecnologias florestais e na transformação, mobilização e comercialização de produtos florestais - Programa Capitalizar | Modelo Dinâmico Estocástico de Equilíbrio Geral (DSGE) - QUEST III com crescimento endógeno (ver Roeger, Varga e Veld, 2008) | A estimativa apresentada baseia-se num cenário em que 50% dos montantes disponíveis nas linhas de financiamento são traduzidos em investimento produtivo. O prémio de risco do modelo é reduzido de forma a ser atingido esse montante de investimento. | PIB | 1,93% | 3,15% | 4,77% |
| | | | | Consumo privado | -1,79% | -0,96% | 0,02% |
| | | | | Investimento | 11,38% | 12,87% | 14,75% |
| | | | | Exportações líquidas (% do PIB) | 5,84% | 0,59% | -1,95% |
| | | | | Emprego | 0,48% | 0,50% | 0,53% |
| | | | | PIB | 4,50% | 5,00% | 5,65% |
| Emprego | <ul style="list-style-type: none"> - Contrato-Emprego - Estágios Profissionais | Modelo Dinâmico Estocástico de Equilíbrio Geral (DSGE) - QUEST III com crescimento endógeno (ver Roeger, Varga e Veld, 2008) | A simulação destas medidas foi feita através da redução do imposto sobre o rendimento do trabalho, de forma a alcançar-se o impacto registado no emprego até 2019 (€1913). | Consumo privado | 3,28% | 3,63% | 3,99% |
| | | | | Investimento | 3,13% | 3,54% | 4,15% |
| | | | | Exportações líquidas (% do PIB) | -1,97% | -2,35% | -0,97% |
| | | | | Emprego | 3,94% | 3,94% | 3,96% |
| | | | | PIB | 4,50% | 5,00% | 5,65% |
| | | | | Consumo privado | 3,28% | 3,63% | 3,99% |

Source: Programa Nacional de Reformas 2019-2023, pp.153