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- No conjunto dos meses de outubro e novembro de 2016, a produção industrial mundial acelerou devido sobretudo à melhoria das economias avançadas; enquanto o reforço das trocas comerciais deu-se principalmente para os países emergentes e em desenvolvimento (especialmente asiáticos).

- No quarto trimestre de 2016, assistiu-se globalmente a um maior dinamismo da economia mundial. De facto, entre as economias avançadas, o PIB dos EUA acelerou para 1,9% em termos homólogos reais (1,7% no 3.º trimestre) associado à robustez do consumo privado e à recuperação do investimento privado, nomeadamente do segmento não residencial; enquanto o do Reino Unido manteve-se em 2,2%. De entre os países emergentes, o PIB da China aumentou para 6,8% em termos homólogos reais (6,7% no conjunto dos 3 primeiros trimestres de 2016) resultando, em parte, da melhoria das trocas comerciais de bens, embora as exportações tenham continuado a registar uma variação homóloga negativa. No entanto, para o conjunto do ano de 2016, o PIB da China desacelerou para 6,7% (o valor mais baixo dos últimos 25 anos) e, tanto as exportações como as importações de bens caíram para -7,2% e -5,3%, respetivamente (-2,9% e -14,3%, designadamente, em 2015). A taxa de inflação homóloga das economias avançadas e da China acelerou no final do ano de 2016.

- No 4.º trimestre de 2016 e, de acordo com a estimativa preliminar, o PIB da União Europeia (UE) e da área do euro (AE) aumentou para 1,9% e 1,8% em termos homólogos reais, respetivamente (igual em ambas as zonas ao período precedente). O indicador de sentimento económico teve uma recuperação significativa tanto para a UE como para a AE, devido à melhoria de todos os indicadores de confiança. O mercado de trabalho da UE registou uma melhoria gradual ao longo de 2016, salientando-se uma descida da taxa de desemprego, quer para a UE quer para a AE, situada em 8,2% e 9,6%, respetivamente, em dezembro de 2016 (9,0% e 10,5%, em dezembro de 2015). Em dezembro de 2016, a taxa de inflação homóloga da área do euro aumentou para 1,1% devido sobretudo à recuperação dos preços de energia mas subiu apenas para 0,2% em média para o conjunto do ano de 2016 (0,0%, em média, no ano de 2015) em consequência de uma redução menos acentuada dos preços de energia.

- Em janeiro de 2017 e, até ao dia 27, o preço *spot* do petróleo Brent continuou a aumentar, para se situar, em média, em 56 USD/bbl (52 €/bbl),influenciado pelo recente acordo alcançado entre países membros e não membros da OPEP para um corte de produção a ter lugar a partir do início de 2017.

- As taxas de juro de curto prazo prosseguiram o seu movimento descendente para a área do euro, situando-se, em -0,33%, em média, até ao dia 27 de janeiro de 2017 (-0,26%, em média, no ano de 2016); enquanto, nos EUA, acentuou-se o movimento de subida para 1,02% (0,74%, em média, em 2016).

- No início de 2017, os índices bolsistas internacionais continuaram a apresentar uma evolução favorável, com destaque para o dos EUA, refletindo a divulgação de resultados de empresas acima do esperado e a expectativa de um crescimento económico mais forte deste país. Em janeiro de 2017, o euro apreciou-se 1,3% face ao dólar (1,07) no dia 27; invertendo a tendência registada no final do ano de 2016, a qual correspondeu a uma depreciação de 3,2% face ao final de 2015 (1,09), num contexto de políticas monetárias divergentes entre os dois lados do Atlântico.

Conjuntura Nacional

- De acordo com os dados publicados pelo INE para o 4.º trimestre, o indicador de clima económico registou uma ligeira deterioração face ao trimestre anterior.

- O Índice de confiança dos consumidores melhorou, em termos médios, no último trimestre do ano, enquanto os indicadores qualitativos dos empresários apresentaram um desenvolvimento misto.
- O Indicador de Máquinas e Equipamentos do INE registou um crescimento homólogo de 0,5%, o que representa uma diminuição de 1,2 p.p. face ao registado no 3.º trimestre do ano.
- O Índice de Volume de Negócios no Comércio a Retalho cresceu, em termos médios homólogos, 4,1% nos meses de outubro e novembro, acelerando 0,8 p.p. face ao valor do terceiro trimestre.
- No final de 2016, o número de desempregados registados nos centros de emprego diminuiu, em termos homólogos, 13,1%, enquanto os desempregados registados ao longo do ano caíram 9,3%.
- Em 2016, a variação homóloga do IPC fixou-se em 0,6%, 0,1 p.p. acima do valor registado em 2015. O IHPC registou um crescimento semelhante, 0,4 p.p. acima do registado na área do euro. Em igual período, o IPPI registou uma variação homóloga de -2,8%.
- Até novembro de 2016, o excedente acumulado da balança corrente foi de 879 milhões de euros, o que representa uma redução de 74 milhões de euros em termos homólogos.
- O sector institucional das Administrações Públicas registou, no final do mês de dezembro, um saldo global negativo de 4.256 milhões de euros[1]. Este resultado representa uma melhoria de 497 milhões de euros relativamente ao saldo global observado no período homólogo do ano anterior. No mesmo período, o saldo primário atingiu os 4.029 milhões de euros.
- A evolução do saldo global das Administrações Públicas foi marcada por um aumento de 2,7%[2] da receita efetiva que mais do que compensou o aumento de 1,9% da despesa efetiva.
- Os subsetores que integram as Administrações Públicas contribuíram para este saldo global de formas distintas. Enquanto o subsetor da Segurança Social e o subsetor das Administração Local registaram saldos globais positivos de 1.559 milhões de euros e 662 milhões de euros, respetivamente, o subsetor da Administração Central (Estado e SFA) e o subsetor da Administração Regional apresentaram saldos globais negativos de 6.450 milhões de euros e 27 milhões de euros, respetivamente.
- A dívida consolidada das Administrações Públicas (ótica de Maastricht) alcançou no final de novembro o montante de 241.800 milhões de euros, incorporando uma redução de 1.275 milhões de euros relativamente ao mês anterior e um aumento de 10.216 milhões de euros face ao final de 2015.
- No final do mês de dezembro a dívida direta do Estado era de 236.283 milhões de euros, o que corresponde a uma diminuição de 1.206 milhões de euros relativamente ao mês anterior.

Comércio Internacional

- Os ***resultados preliminares das estatísticas do comércio internacional*** recentemente divulgados[3] apontam para a estagnação das exportações de mercadorias nos primeiros onze meses de 2016, em termos homólogos. Neste mesmo período, as importações aumentaram 0,2%, o que levou a um agravamento do défice da balança comercial (fob-cif) de 0,8%, correspondendo a 71 milhões de euros. A taxa de cobertura das importações pelas exportações foi de 83,2%, menos 0,1 p.p. que em igual período de 2015.
- Nos primeiros onze meses de 2016, excluindo os produtos energéticos, as exportações de mercadorias registaram uma variação homóloga positiva (1,9%). As importações de mercadorias, excluindo os produtos energéticos, registaram um crescimento superior ao crescimento das expor-

[1] Exceto se for referido o contrário, os valores indicados foram apurados numa base de caixa.
[2] Exceto se for referido o contrário, as variações em percentagem referem-se ao período homólogo do ano anterior.
[3] Resultados mensais preliminares de janeiro a novembro de 2016.

tações (4,4%), o que levou a um agravamento do saldo negativo da respetiva balança comercial em 23,8%.

* No último ano a terminar em novembro de 2016, as exportações de mercadorias diminuíram 0,1%, em termos homólogos, sendo que o contributo da maioria dos grupos contrariou essa tendência. Destaca-se o contributo positivo das "Máquinas e aparelhos e suas partes" (+0,8 p.p.), dos "Têxteis, vestuário e seus acessórios" (+0,5 p.p.), dos "Agroalimentares", "Químicos" e dos "Produtos acabados diversos" (todos com 0,4 p.p.). Nos primeiros onze meses de 2016, deve igualmente destacar-se o contributo positivo das "Máquinas e aparelhos e suas partes" (+0,9 p.p.), seguido do contributo positivo dos "Têxteis, vestuário e seus acessórios" (+0,5 p.p.), dos "Agroalimentares" e dos "Produtos acabados diversos" (ambos com +0,4 p.p.).

* De janeiro a novembro de 2016, as exportações para o mercado comunitário cresceram 3,7%, em termos homólogos, com um contributo positivo de 2,7 p.p. que é integralmente neutralizado pela quebra das exportações para países terceiros que atingiu os 9,9%. As exportações para os países da UE-15 registaram uma taxa de variação homóloga positiva (3,5%) e para os países do Alargamento (8,1%), com contributos positivos de 2,4 p.p. e 0,3 p.p., respetivamente. As exportações para Espanha, o principal mercado de destino das exportações portuguesas de mercadorias (26,3% do total de janeiro a novembro de 2016), registaram o maior contributo positivo Intra UE-15 (+1,3 p.p.), seguidas das exportações para a França e o Reino Unido (+0,6 p.p. e +0,4 p.p. respetivamente).

* Nos primeiros onze meses de 2016, as exportações para os Países Terceiros registaram uma taxa de variação homóloga negativa (-9,9%), passando a representar 24,4 % do total das exportações nacionais (-2,6 p.p. face ao período homólogo). Destaca-se o comportamento positivo das exportações para a Turquia (+16,1%) e Suíça (+16%).

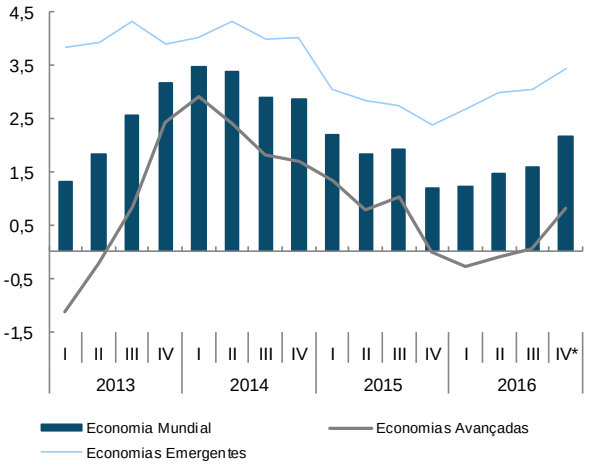
* De acordo com os dados da Balança de Pagamentos divulgados para o mês de outubro de 2016, as Exportações de Bens e Serviços registaram um crescimento homólogo de 0,5% nos primeiros dez meses de 2016. A componente de Serviços registou uma performance positiva (3,2%) tendo contribuído positivamente (+1,1 p.p.) para o crescimento das exportações totais.

1. Enquadramento Internacional

Atividade Económica Mundial

No conjunto dos meses de outubro e novembro de 2016, a produção industrial mundial acelerou para 2,2% em termos homólogos (1,6% no 3.º trimestre) devido sobretudo à melhoria das economias avançadas (particularmente significativa no Japão).

Figura 1.1.Produção Industrial
(VH, em %)



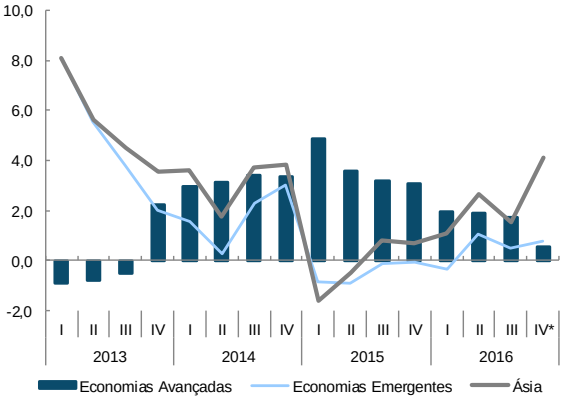
Fonte: CPB. * Média de outubro e novembro.

Igualmente, o comércio mundial de mercadorias também acelerou, em resultado do maior dinamismo das exportações mundiais; já que as importações mundiais desaceleraram.

De facto, no conjunto dos meses de outubro e novembro de 2016 e, em termos homólogos reais:

- o comércio mundial aumentou 1,2% (1,1% no 3.º trimestre);
- as exportações mundiais reforçaram o seu crescimento para 1,8% (1,0% no 3.º trimestre); enquanto as importações abrandaram para 0,7% (1,2% no 3.º trimestre).

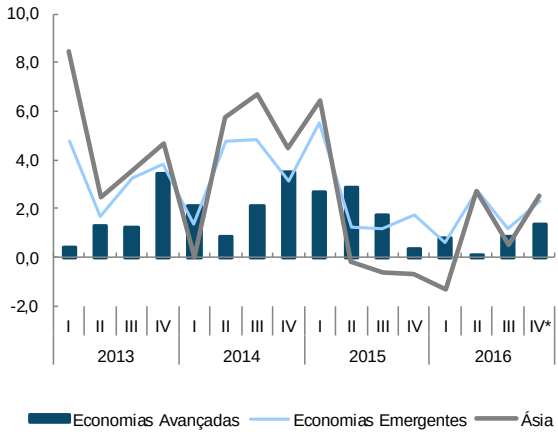
Figura 1.2. Importações de Mercadorias
(VH em volume, em %)



Fonte: CPB. * Média de outubro e novembro.

Os dados disponíveis para o 4.º trimestre de 2016, indicam um reforço das trocas comerciais dos países emergentes e em desenvolvimento (especialmente asiáticos). Já relativamente às economias avançadas, assistiu-se a uma desaceleração das importações, contrastando com uma melhoria das exportações.

Figura 1.3. Exportações de Mercadorias
(VH em volume, em %)



Fonte: CPB. * Média de outubro e novembro.

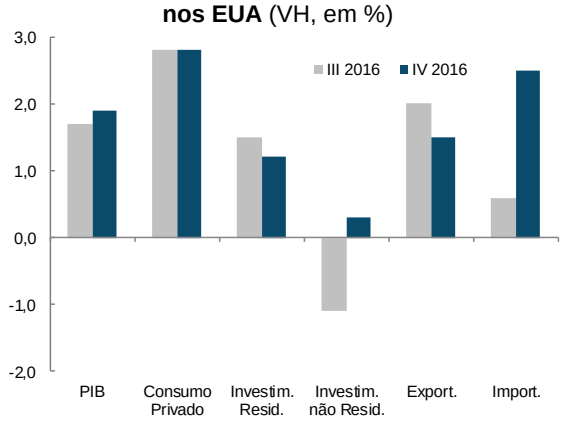
Quadro 1.1. Indicadores de Atividade Económica Mundial

Indicador	Unidade	Fonte	2015	2015		2016			2016			
				3T	4T	1T	2T	3T	ago	set	out	nov
Índice de Produção Industrial Mundial	VH	CPB	1,8	1,9	1,2	1,2	1,5	1,6	1,9	1,6	1,6	2,7
Economias Avançadas	VH	CPB	0,8	1,0	0,0	-0,3	-0,1	0,1	0,6	0,2	0,2	1,4
Economias Emergentes	VH	CPB	2,8	2,8	2,4	2,7	3,0	3,1	3,2	2,9	2,9	4,0
Comércio Mundial de Mercadorias	VH	CPB	2,0	1,6	1,3	0,9	1,4	1,1	2,1	1,2	-0,3	2,7
Importações Mundiais	VH	CPB	1,9	1,8	1,7	1,0	1,6	1,2	2,1	1,6	-0,4	1,7
Economias Avançadas	VH	CPB	3,7	3,2	3,1	1,9	1,9	1,7	2,7	1,0	-0,2	1,4
Economias Emergentes	VH	CPB	-0,5	-0,1	-0,1	-0,3	1,0	0,5	1,3	2,5	-0,6	2,1
Exportações Mundiais	VH	CPB	2,1	1,5	1,0	0,7	1,3	1,0	2,1	0,7	-0,2	3,8
Economias Avançadas	VH	CPB	1,9	1,7	0,3	0,8	0,1	0,9	1,9	1,0	0,3	2,4
Economias Emergentes	VH	CPB	2,4	1,2	1,7	0,6	2,7	1,1	2,5	0,3	-0,8	5,4

Atividade Económica Extra-UE

No 4.º trimestre de 2016, assistiu-se a um crescimento mais dinâmico das economias avançadas (tendo o PIB dos EUA acelerado) acompanhado por uma melhoria da produção industrial tanto do Japão como da União Europeia. A taxa de inflação homóloga das economias avançadas e da China acelerou na parte final do ano.

Figura 1.4. PIB e componentes da Despesa em volume nos EUA (VH, em %)



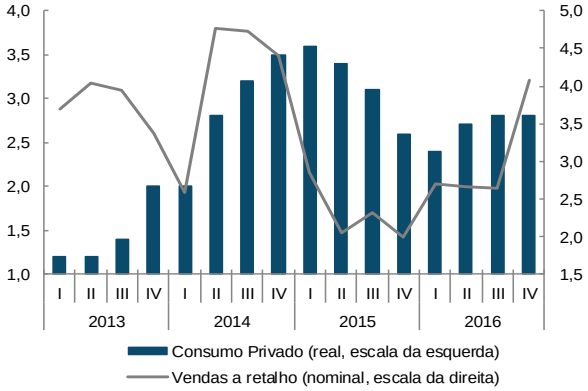
Fonte: *Bureau of Economic Analysis.*

Nos **EUA**, o PIB acelerou para 1,9% em termos homólogos reais, no 4.º trimestre de 2016 (1,7% no 3.º trimestre) associado à melhoria da procura interna.

Com efeito, o investimento privado recuperou, nomeadamente do segmento não residencial e o consumo privado manteve um forte crescimento (2,8%). O contributo das exportações líquidas para o crescimento do PIB tornou-se negativo associado ao abrandamento das exportações e ao forte crescimento das importações.

No 4.º trimestre de 2016, a taxa de desemprego desceu para 4,7% (4,9% no período precedente) e a taxa de inflação homóloga subiu para 1,8% (1,1% no 3.º trimestre).

Figura 1.5. Consumo Privado e Vendas a Retalho dos EUA (VH, em %)

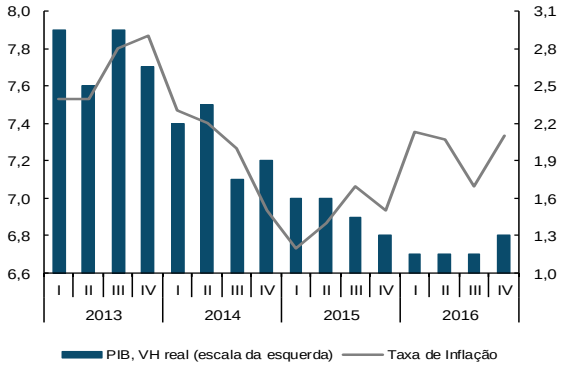


Fontes: *Bureau of Economic Analysis; Census Bureau.*

No 4.º trimestre de 2016, o PIB da **China** aumentou para 6,8% em termos homólogos reais (6,7% no 3.º trimestre). Neste período, as trocas comerciais de bens melhoraram; embora as exportações tenham continuado a registar uma variação homóloga negativa em termos nominais.

Para o conjunto do ano de 2016, o PIB desacelerou para 6,7% (o valor mais baixo dos últimos 25 anos) e, tanto as exportações como as importações de bens caíram para -7,2% e -5,3%, respetivamente (-2,9% e -14,3%, designadamente, em 2015).

Figura 1.6. PIB e Taxa de Inflação da China



Fonte: Instituto de Estatística da China.

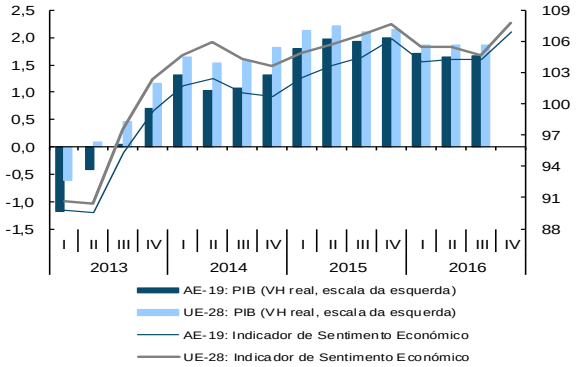
Quadro 1.2. Indicadores de Atividade Económica Extra-UE

Indicador	Unidade	Fonte	2016	2015	2016			2016			
				4T	1T	2T	3T	4T	set	out	nov	dez
EUA – PIB real	VH	BEA	1,6	1,9	1,6	1,3	1,7	1,9	-	-	-	-
Índice de Produção Industrial	VH	BGFRS	-1,0	-1,6	-1,6	-1,1	-1,0	-0,3	-1,1	-0,7	-0,8	0,5
Índice ISM da Indústria Transformadora	%	ISM	51,5	48,6	49,8	51,8	51,2	53,3	51,5	51,9	53,2	54,7
Índice ISM dos Serviços	%	"	58,1	60,2	57,2	57,8	57,1	60,3	60,3	57,7	61,7	61,4
Indicador de Confiança dos Consumidores	SRE	Michigan	91,8	91,3	91,6	92,4	90,3	93,1	91,2	87,2	93,8	98,2
Taxa de Desemprego	%	BLS	4,9	5,0	4,9	4,9	4,9	4,7	4,9	4,8	4,6	4,7
China – PIB real	VH	NBSC	6,7	6,8	6,7	6,7	6,7	6,8	-	-	-	-
Exportações	VH	MC	-7,2	-5,3	-11,3	-6,0	-6,7	-4,5	-10,2	-7,5	0,1	-6,1
Japão – PIB real	VH	COGJ	:	1,2	0,3	0,9	1,0	:	-	-	-	-

Atividade Económica da UE

No 4.º trimestre de 2016, o indicador de sentimento económico teve uma recuperação significativa tanto para a União Europeia (UE) como para a área do euro (AE), resultando da melhoria de todos os indicadores de confiança. De acordo com o indicador previsional do Banco de Itália, de dezembro de 2016, o PIB trimestral em cadeia da área do euro aumentou para o valor mais elevado desde a primavera de 2011 (+0,3%, no 3.º trimestre de 2016).

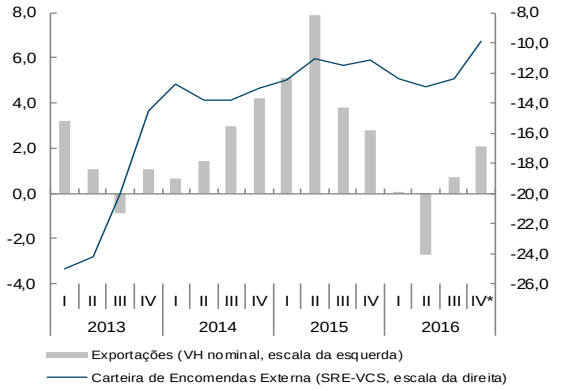
Figura 1.7. PIB e Indicador de Sentimento Económico



Fontes: Comissão Europeia; Eurostat.

Os indicadores quantitativos para a área do euro, no conjunto dos meses de outubro e novembro de 2016, indicam um reforço da atividade económica (produção industrial; vendas a retalho e exportações de bens em termos nominais).

Figura 1.8. Exportações e Encomendas externas da Área do Euro

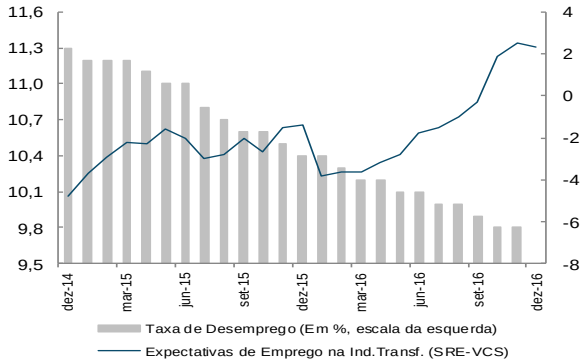


Fontes: Comissão Europeia; Eurostat. * P/Exportações, média de outubro e novembro.

Em novembro de 2016, a taxa de desemprego desceu para 8,3% na UE (8,4% em outubro); enquanto se manteve em 9,8% para a AE.

Em dezembro de 2016, as expectativas dos empresários da área do euro quanto à criação de emprego pioraram para os setores da indústria transformadora, serviços e comércio a retalho; enquanto melhoraram para o ramo da construção.

Figura 1.9. Mercado de Trabalho da Área do Euro



Fontes: Comissão Europeia; Eurostat.

Em dezembro de 2016, a taxa de inflação homóloga da área do euro subiu para 1,1% (o valor mais elevado desde outubro de 2013) devido sobretudo à recuperação dos preços de energia e à aceleração dos preços de bens alimentares não transformados.

No entanto, para o conjunto do ano de 2016, a taxa de inflação aumentou apenas para 0,2% em média anual (0,0% em 2015) refletindo uma quebra menos acentuada dos preços de energia, para -5,0%, em média (-6,9%, no ano de 2015); já que a inflação subjacente manteve-se em 0,8%.

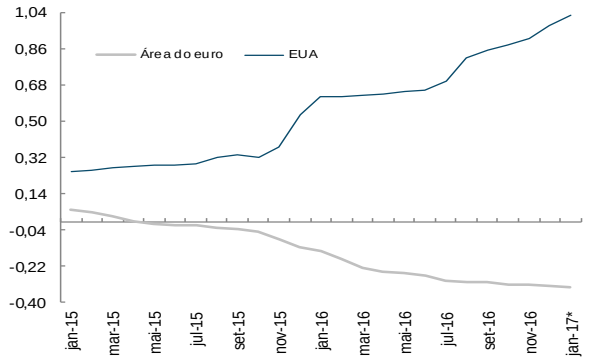
Quadro 1.3. Indicadores de Atividade Económica da UE

Indicador	Unidade	Fonte	2016	2015	2016				2016			
				4T	1T	2T	3T	4T	set	out	nov	dez
União Europeia (UE-28) – PIB real	VH	Eurostat	:	2,1	1,9	1,9	1,9	:	-	-	-	-
Indicador de Sentimento Económico	Índice	CE	105,9	107,7	105,5	105,5	104,7	107,8	105,5	106,9	107,3	109,1
Área do Euro (AE-19) – PIB real	VH	Eurostat	:	2,0	1,7	1,7	1,7	:	-	-	-	-
Indicador de Sentimento Económico	Índice	CE	104,9	106,2	104,0	104,3	104,3	106,9	104,9	106,4	106,6	107,8
Índice de Produção Industrial	VH	Eurostat	:	2,0	1,4	1,1	1,2	:	1,4	0,8	3,0	:
Índice de Vendas a Retalho	VH real	"	:	2,4	2,2	1,8	1,4	:	1,1	2,7	2,2	:
Taxa de Desemprego	%	"	:	10,5	10,3	10,1	10,0	:	9,9	9,8	9,8	:
IHPC	VH	"	0,2	0,2	0,0	-0,1	0,3	0,7	0,4	0,5	0,6	1,1

Mercados Financeiros e Matérias-Primas

Em janeiro de 2017, as taxas de juro de curto prazo prosseguiram o seu movimento descendente para a área do euro, renovando níveis historicamente baixos, para -0,33%, em média, até ao dia 27 (-0,26%, em média para o ano de 2016). Nos EUA, as taxas de juro a 3 meses acentuaram o movimento de subida no inívio do ano, sendo de 1,02%, em média, até dia 27 (0,74%, em média, no ano de 2016).

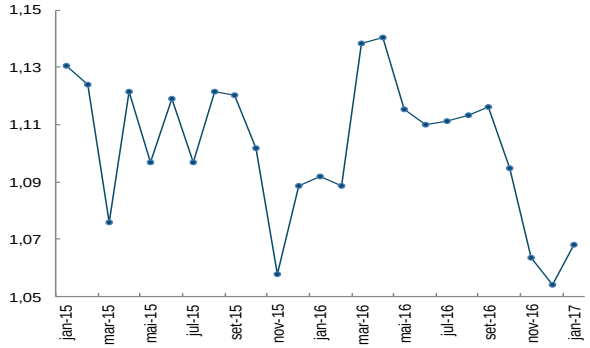
Figura 1.10. Taxa de Juro a 3 meses do mercado monetário (Média mensal, em %)



Fonte: BCE; IGCP. * Média até ao dia 27.

Em dezembro de 2016, as taxas de juro de longo prazo subiram tanto para os EUA como para a área do euro, embora de forma mais acentuada para o primeiro caso. Também, os investidores penalizaram alguns mercados obrigacionistas (Portugal, Itália) resultando num aumento do diferencial face à Alemanha, devido, em parte, à fragilidade do setor bancário de ambos.

Figura 1.11. Taxa de Câmbio do Euro face ao Dólar
(fim do período)

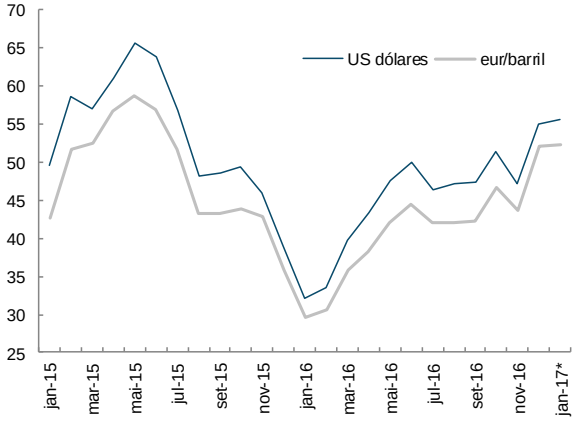


Fonte: Banco de Portugal. Para janeiro, o valor é do dia 27.

Em janeiro de 2017, o euro apreciou-se face ao dólar, tendo atingido 1,07 no dia 27. Mas, ao longo do ano de 2016, o euro face ao dólar seguiu uma trajetória marcadamente descendente, para se situar em 1,05 no final de 2016, representando uma depreciação de 3,2% face ao final de 2015 (1,09). Esta evolução deu-se num contexto de políticas monetárias divergentes entre os dois lados do Atlântico.

Em dezembro de 2016, o índice de preços relativo ao preço do petróleo importado subiu para 44,8 (por memória atingiu o valor 100 durante a crise petrolífera de 1979). Em janeiro de 2017 e, até ao dia 27, o preço do petróleo *Brent* continuou a aumentar, para se situar, em média, em 56 USD/bbl (52€/bbl), influenciado pelo recente acordo alcançado entre países membros e não membros da OPEP para um corte na produção, a partir do início de 2017.

Figura 1.12. Preço médio *Spot* do Petróleo *Brent*
(Em USD e euros)



Fontes: DGEG, IGCP e BP. * Média até ao dia 27.

No 4.º trimestre de 2016, o preço das matérias-primas não energéticas acelerou, tendo aumentado 9,8% em termos homólogos (1,3% no 3.º trimestre) tendência que se estendeu a todos os produtos, com destaque para os metais e os *inputs* industriais.

Quadro 1.4. Indicadores Monetários e Financeiros Internacionais

Indicador	Unidade	Fonte	2016	2015	2016				2016			
				4T	1T	2T	3T	4T	set	out	nov	dez
Taxa Euribor a 3 meses*	%	BP	-0,32	-0,13	-0,24	-0,28	-0,30	-0,32	-0,30	-0,31	-0,31	-0,32
Yield OT 10 anos – EUA**	%	Eurostat	1,84	2,18	1,91	1,75	1,56	2,13	1,63	1,76	2,14	2,49
Yield OT 10 anos – Área do euro**	%	"	0,93	1,18	1,03	0,94	0,66	1,10	0,74	0,78	1,23	1,29
Taxa de Câmbio*	Eur/USD	BP	1,054	1,089	1,139	1,110	1,116	1,054	1,116	1,095	1,064	1,054
Dow Jones*	VC	Yahoo	13,4	7,0	1,5	1,4	2,1	7,9	-0,5	-0,9	5,4	3,3
DJ Euro Stoxx50*	VC	"	0,7	5,4	-8,0	-4,7	4,8	9,6	-0,7	1,8	-0,1	7,8
Spot do Petróleo *Brent* em USD/bbl**	USD/bbl	DGEG	45,06	44,78	35,14	46,96	46,97	51,16	47,30	51,39	47,13	54,95
Spot do Petróleo *Brent* em USD/bbl**	VH	"	-16,0	-41,9	-36,2	-26,0	-8,3	14,3	-2,7	4,2	2,4	41,0
Spot do Petróleo *Brent* em euros/bbl**	VH	DGEG e BP	-15,8	-33,7	-34,8	-27,6	-8,7	16,1	-2,6	6,1	1,8	45,5
Preço Relativo do Petróleo em euros***	1979=100	GEE	34,4	36,8	25,3	35,4	36,3	40,8	36,6	39,7	37,8	44,8

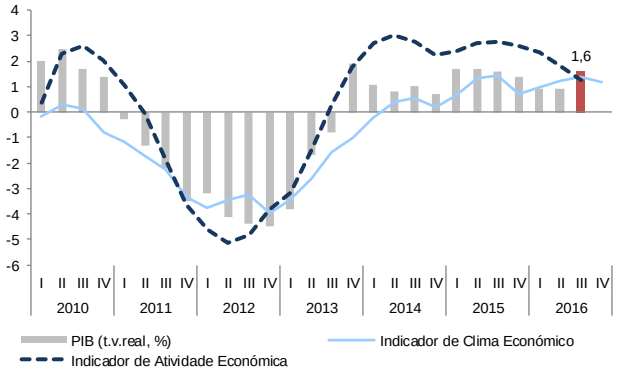
* Fim de período; ** Valores médios; *** Preço Relativo do Petróleo é o rácio entre o preço de importação de ramas de petróleo bruto em euros e o deflator do PIB em Portugal.

2. Conjuntura Nacional

Atividade Económica e Oferta

De acordo com os dados publicados pelo INE para o 4.º trimestre de 2016, o indicador de clima económico registou uma deterioração quando comparado com o trimestre precedente.

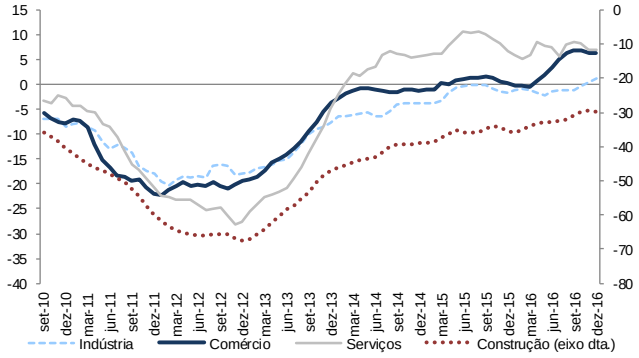
Figura 2.1. Indicador de Clima Económico



Fonte: INE.

No 4.º trimestre do ano, registou-se uma melhoria nos indicadores de confiança relativos ao setor da indústria e ao setor da construção face ao registado no trimestre anterior. Pelo contrário, os indicadores de confiança relativos ao setor dos serviços e do comércio a retalho registaram uma deterioração no último trimestre do ano.

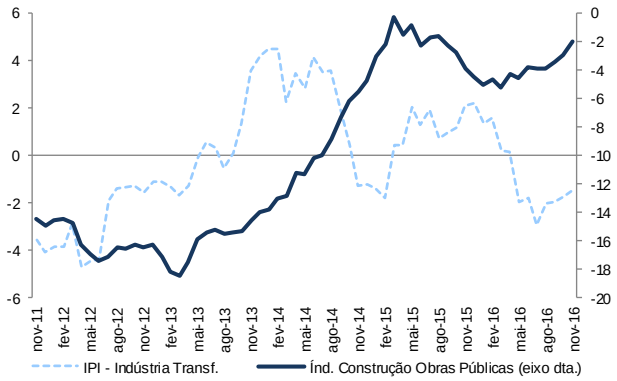
Figura 2.2. Indicadores de Confiança
(SRE, MM3)



Fonte: INE.

No trimestre terminado em novembro de 2016, o indicador de atividade económica do INE apresentou uma deterioração quando comparado com o trimestre precedente (taxa de crescimento homólogo de 0,9% que compara com 1,3% no 3º trimestre).

Figura 2.3. Índices de Produção
(VH, MM3)



Fonte: INE

Os dados quantitativos disponíveis relativos ao trimestre terminado em novembro, mostram que, em termos médios homólogos:

- na indústria transformadora, o Índice de Produção registou uma variação de -1,5% e o Índice de Volume de Negócios apresentou uma variação de 1,3% (-1,9% e -0,8% no 3.º trimestre de 2016, respetivamente);
- o Índice de Produção na Construção e Obras Públicas apresentou uma quebra de 2% inferior ao registado no 3.º trimestre de 2016 (-3,4%);
- o Índice de Volume de Negócios nos Serviços apresentou um aumento quando comparado com o período homólogo em 4,9% (+3,8 p.p. face ao 3.º trimestre de 2016);
- o Índice de Volume de Negócios no Comércio a Retalho registou um crescimento de 3,7%, valor superior em 0,4 p.p. quando comparado com o 3.º trimestre do ano.

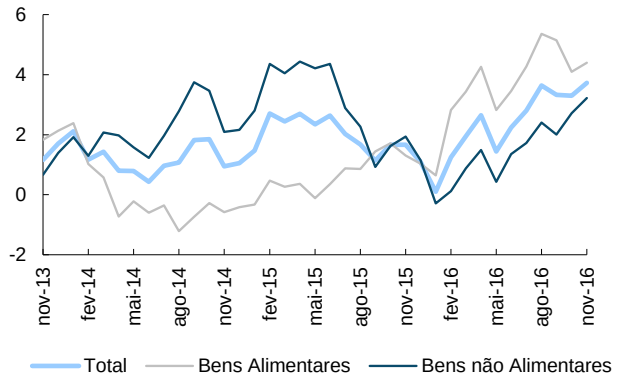
Quadro 2.1. Indicadores de Atividade Económica e Oferta

Indicador	Unidade	Fonte	2016	2015	2016				2016				
				4T	1T	2T	3T	4T	ago	set	out	nov	dez
PIB – CN Trimestrais	VH Real	INE	:	1,4	0,9	0,9	1,6	:	:	:	:	:	:
Indicador de Clima Económico	SRE-VE	"	1,2	0,7	1,0	1,2	1,3	1,1	1,3	1,3	1,3	1,2	1,1
Indicador de Confiança da Indústria	SRE-VCS	"	-0,6	-1,8	-1,1	-1,5	-1,1	1,1	-1,3	-0,8	0,8	1,3	1,2
Indicador de Confiança do Comércio	"	"	4,0	0,4	-0,5	3,4	6,9	6,2	7,5	6,4	6,5	6,3	5,8
Indicador de Confiança dos Serviços	"	"	7,2	6,8	5,9	7,6	8,5	7,0	9,7	8,1	7,1	5,6	8,4
Indicador de Confiança da Construção	"	"	-31,8	-35,4	-33,9	-32,8	-30,9	-29,7	-31,0	-29,6	-29,2	-29,7	-30,2
Índice de Produção Industrial – Ind. Transf.	VH	"	:	2,2	0,2	-1,8	-1,9	:	-1,5	-0,7	-3,0	-0,7	:
Índice de Volume de Negócios – Ind. Transf.	"	"	:	-1,5	-3,1	-3,0	-0,8	:	4,6	0,1	-3,1	7,0	:
Índice de Volume de Negócios - Serviços	"	"	:	-4,5	-1,3	-1,1	1,1	:	2,2	1,5	5,5	7,6	:

Consumo Privado

Nos meses de outubro e novembro de 2016, o Índice de Volume de Negócios no Comércio a Retalho cresceu 4,1% quando comparado com igual período de 2015, (+0,8 p.p.) quando comparado com o terceiro trimestre. A componente alimentar foi a mais robusta, ao crescer 4,2% (5,1% no terceiro trimestre), ligeiramente acima dos 4% registados pela componente não alimentar (2% no terceiro trimestre).

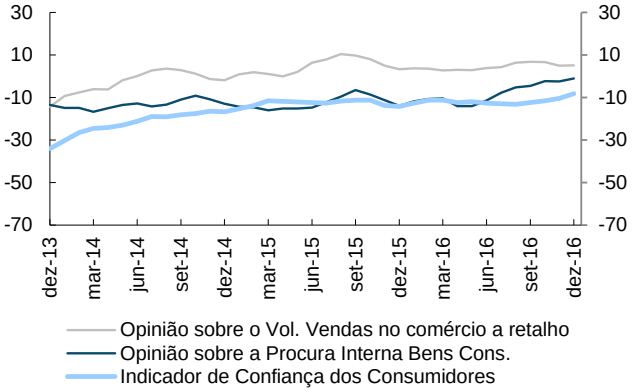
Figura 2.4. Índice do Volume de Negócios no Comércio a Retalho
(MM3,VH)



Fonte: INE.

No último trimestre de 2016, os indicadores qualitativos de confiança dos consumidores e oportunidade de aquisição de bens duradouros melhoraram quando comparado com o terceiro trimestre. Já os indicadores qualitativos de opinião dos empresários registaram uma evolução mista, com a procura interna de bens de consumo a melhorar enquanto o volume de vendas no comércio a retalho apresentou uma deterioração.

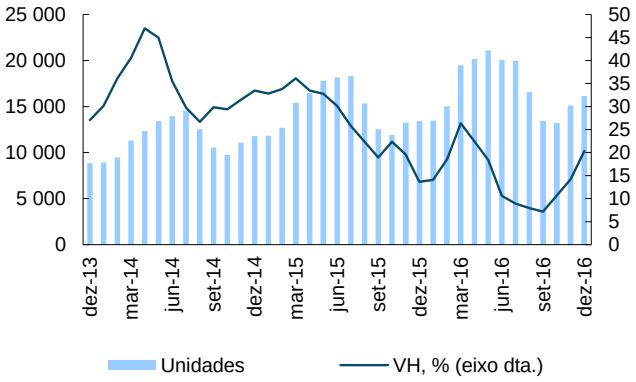
Figura 2.5. Opiniões dos Empresários e Confiança dos Consumidores
(SRE-VE, MM3)



Fonte: INE.

Nos três últimos meses de 2016 foram vendidos 48 419 veículos ligeiros de passageiros, um aumento de 20,3% face ao período homólogo, e mais 8 119 do que no terceiro trimestre. No conjunto do ano foram vendidos 207 345 veículos, mais 16,2% do que em 2015.

Figura 2.6. Venda de Automóveis Ligeiros de Passageiros
(MM3)



Fonte: ACAP.

Quadro 2.2. Indicadores de Consumo Privado

Indicador	Unidade	Fonte	2016	2015	2016				2016				
				4T	1T	2T	3T	4T	ago	set	out	nov	dez
Consumo Privado - CN Trimestrais	VH real	INE	:	1.9	2.5	1.6	1.9	:	-	-	-	-	-
Indicador de Confiança dos Consumidores	SER-VE	"	-11.1	-14.1	-11.3	-12.6	-12.4	-8.2	-12.7	-11.3	-10.7	-9.3	-4.7
Confiança Comércio Retalho: Vendas últimos 3 meses	SER-VE	"	4.6	3.3	2.7	3.9	6.8	5.1	9.7	4.4	5.9	4.7	4.7
Índice de Vol. De Negócios no Comércio a Retalho*	VH	"	:	1.1	1.9	2.2	3.3	:	3.0	2.9	3.9	4.3	:
Bens Alimentares	VH	"	:	1.0	3.4	3.5	5.1	:	3.7	4.7	3.8	4.6	:
Bens não alimentares	VH	"	:	1.1	0.9	1.4	2.0	:	2.6	1.6	4.0	4.0	:
Vendas de Automóveis Ligeiros de Passageiros**	VH	ACAP	16.2	13.6	26.4	10.6	7.2	20.3	13.5	10.6	8.8	23.2	29.4
Importação de Bens de Consumo***	VH	INE	:	4.5	4.6	5.4	6.1	:	12.7	6.0	1.0	12.4	:

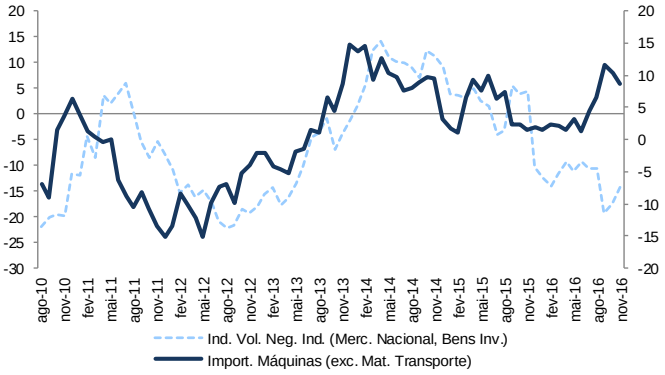
* Índices deflacionados, corrigidos de sazonalidade e de dias úteis; ** Inclui veículos Todo-o-Terreno e Monovolumes com mais de 2300 Kg; *** Exclui material de transporte.

Investimento

Os dados disponíveis para o investimento no 4.º trimestre de 2016, mostram que, em termos médios homólogos:

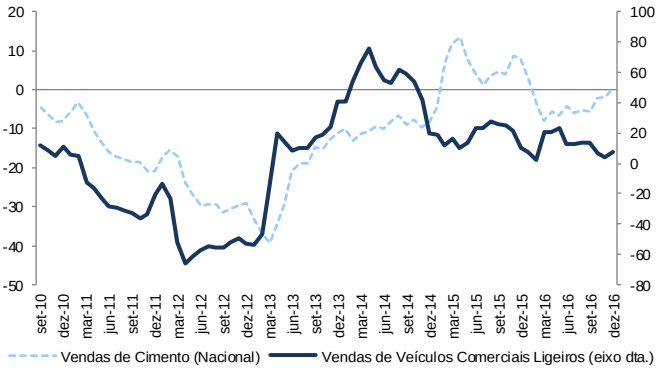
- as vendas de veículos comerciais ligeiros aumentaram 7,8% (-5,7 p.p. face ao 3.º trimestre de 2016), enquanto as vendas de veículos comerciais pesados registaram um aumento de 14,8%, valor superior em 9,6 p.p. ao apresentado no 3.º trimestre de 2016.
- as vendas de cimento registaram uma variação de 0,2% (-5,6% no 3.º trimestre de 2016);
- O Indicador de Máquinas e Equipamentos do INE registou um crescimento homólogo de 0,5%, o que representa uma diminuição de 1,2 p.p. face ao registado no 3.º trimestre de 2016.

Figura 2.8. Bens de Equipamento
(VH, MM3)



Fonte: INE.

Figura 2.7. Vendas de Cimento e de Veículos Comerciais Ligeiros
(VH, MM3)



Fonte: ACAP, Secil, Cimpor.

Outros dados quantitativos disponíveis relativos ao trimestre terminado em novembro, mostram que, em termos médios homólogos:

- o Índice de Volume de Negócios da Indústria de Bens de Investimento para o mercado nacional registou uma variação de -14,2% (-19,4% no 3.º trimestre de 2016);
- as importações de máquinas e outros de bens de capital exceto material de transporte, em termos nominais, cresceram 8,7% (11,5% no 3.º trimestre de 2016).

Quadro 2.3 Indicadores de Investimento

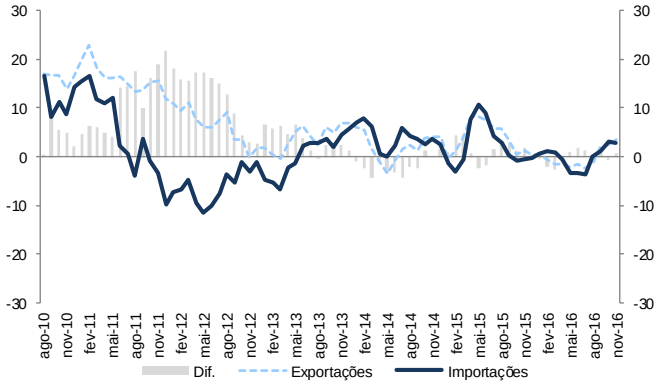
Indicador	Unidade	Fonte	2016	2015	2016				2016				
				3T	1T	2T	3T	4T	ago	set	out	nov	dez
FBC – CN Trimestrais	VH Real	INE	:	5,9	-2,1	-2,3	-2,5	:	:	:	:	:	:
da qual, FBCF	VH Real	"	:	1,5	-2,6	-2,3	-0,9	:	:	:	:	:	:
Indicador de FBCF	VH/mm3	"	:	4,1	0,0	-0,5	-1,2	:	-1,2	-1,2	-1,4	-0,4	:
Vendas de Cimento	VH	SECIL e CIMPOR	-4,4	8,0	-7,8	-4,4	-5,6	0,2	0,0	-3,0	-3,8	0,9	4,4
Vendas de Veículos Comerciais Ligeiros	VH	ACAP	13,0	10,0	20,6	12,4	13,5	7,8	13,5	16,7	-7,6	4,3	22,1
Vendas de Veículos Comerciais Pesados	VH	"	19,4	9,8	36,9	23,3	5,2	14,8	-10,5	21,7	36,2	-29,3	41,1
Volume Vendas Bens de Investimento*	SRE-VE	INE	-7,1	-6,4	-10,3	-10,0	-1,5	-6,6	2,4	-7,8	-16,2	-1,5	-2,0
Licenças de Construção de fogos	VH	"	:	24,9	21,9	62,6	38,4	:	44,7	58,7	12,4	24,3	:
Importações de Bens de Capital**	VH	"	:	1,9	2,2	1,2	11,5	:	18,0	11,7	3,4	11,0	:
Índice Vol. Negócios da IT de Bens de Inv.***	VH	"	:	-10,3	-11,7	-9,2	-19,4	:	-7,8	-29,3	-9,0	-0,3	:

* no Comércio por Grosso; ** excepto Material de Transporte; *** para o Mercado nacional

Contas Externas

Em termos médios homólogos nominais, os dados relativos ao comércio internacional de bens, divulgados pelo INE, tendo em conta o trimestre terminado em novembro, apontam para um aumento das exportações de 3,5% e um aumento das importações em 2,8% (1,9% e 1,2% no 3.º trimestre de 2016).

Figura 2.9. Fluxos do Comércio Internacional
(VH, MM3, %)



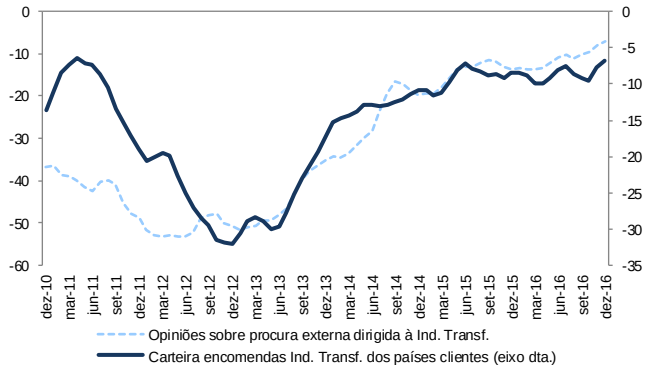
Fonte: INE.

Também para o trimestre terminado em novembro, e em termos médios homólogos nominais:

- a componente extracomunitária das exportações aumentou 5,3%, face a uma redução de 8,6% no trimestre terminado em setembro de 2016. Já as exportações para o mercado intracomunitário aumentaram 2,9% (5,9% no 3.º trimestre de 2016);
- nas importações de bens, o mercado intracomunitário aumentou 5%, enquanto o mercado extracomunitário registou um decréscimo de 4,4% em termos homólogos (2,7% e -3,5% no 3.º trimestre de 2016, respetivamente). Em termos acumulados, a taxa de cobertura do comércio internacional de bens situa-se atualmente em 83,2%, em linha com o verificado no período homólogo.

No 4.º trimestre de 2016, as opiniões sobre a procura externa na indústria foram menos negativas que no trimestre anterior. De igual modo, a carteira de encomendas da indústria transformadora dos países clientes apresentou uma evolução positiva.

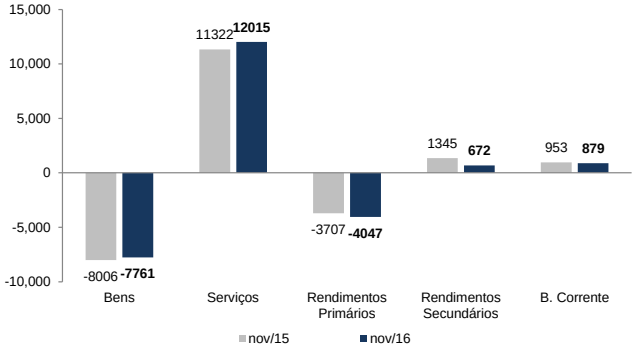
Figura 2.10. Procura Externa dirigida à Indústria



Fonte: INE.

Até novembro de 2016, o excedente acumulado da balança corrente foi de 879 milhões de euros, o que representa um decréscimo de 74 milhões de euros em termos homólogos. Este resultado traduz o decréscimo do saldo da balança de rendimentos primários e do saldo da balança de rendimentos secundários, apesar da evolução positiva do saldo da balança de bens e serviços.

Figura 2.11. Balança Corrente: composição do saldo
(em milhões de euros)



Fonte: BdP. Séries ajustadas de sazonalidade.

No mesmo período, a balança corrente e de capital apresentou uma capacidade de financiamento de 2213 milhões de euros (uma diminuição de 555 milhões de euros face ao mesmo período de 2015).

Quadro 2.4. Indicadores de Contas Externas

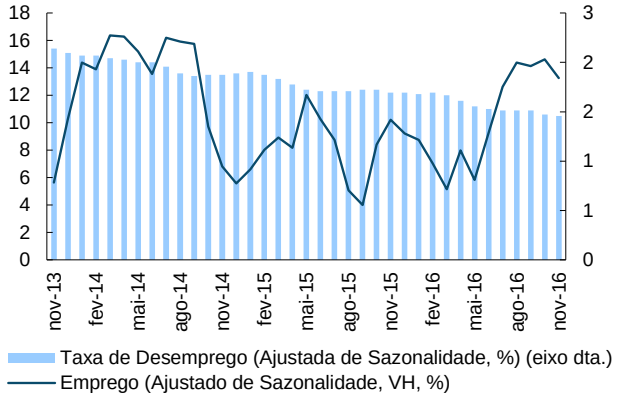
Indicador	Unidade	Fonte	2015	2015		2016			2016				
				3T	4T	1T	2T	3T	jul	ago	set	out	nov
Exportações (B&S) - CN Trimestrais	VH real	INE	6,1	5,6	3,7	3,4	1,8	5,4	:	:	:	:	:
Importações (B&S) - CN Trimestrais	VH real	"	8,2	6,4	6,0	4,7	1,4	3,6	:	:	:	:	:
Saldo de Bens e Serviços	%PIB	"	0,7	-0,2	3,6	0,0	-0,7	:	:	:	:	:	:
Capacidade de financiamento da economia	%PIB	"	1,1	-1,9	4,4	2,1	-0,5	:	:	:	:	:	:
Saídas de Bens	VH nom	"	3,7	0,3	-1,5	-1,5	1,9	0,0	-4,7	5,0	6,8	-3,5	7,6
Entradas de Bens	VH nom	"	2,2	-0,2	1,0	-3,4	1,2	0,0	-6,8	10,0	2,3	-1,8	8,4

Indicador	Unidade	Fonte	2015	2015		2016			2015	2016	Dif.
				3T	4T	1T	2T	3T	jan-nov	jan-nov	
Saldo Balança Corrente e de Capital	10^6 euros	BdP	2 991	2196	845	-114	-819	2291	2768	2213	-555
Saldo Balança de Bens	"	"	-9 103	-2355	-2415	-2007	-2080	-2195	-8006	-7761	245
Saldo Balança de Serviços	"	"	12 402	4407	2867	2084	3039	4765	11322	12015	693
Saldo Balança de Rendimentos Primários	"	"	-4 043	-716	-918	-455	-2451	-1041	-3707	-4047	-339
Saldo Balança de Rendimentos Secundários	"	"	1499	443	557	-14	343	229	1345	672	-672

Mercado de Trabalho

As estimativas do Instituto Nacional de Estatística apontam para que a taxa de desemprego, no trimestre centrado em novembro, se situa-se nos 10,5%, 0,1 p.p. abaixo do valor de outubro e 1,7 p.p. abaixo do registado um ano antes. Para esta evolução concorreu uma redução homóloga da população desempregada em 14,3% e um aumento de 1,8% do emprego (-14% e 2%, respetivamente, na estimativa para outubro).

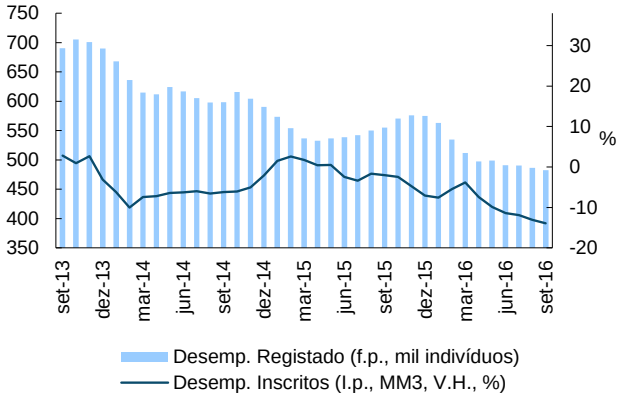
Figura 2.12. Taxa de desemprego e Emprego



Fonte: INE.

No final de 2016, encontravam-se registados, nos centros de emprego, cerca de 483 mil desempregados, uma redução de 13,1% face ao valor registado no final de 2015. Já o desemprego inscrito ao longo do quarto trimestre ascendeu aos cerca de 163 mil pedidos, traduzindo uma descida de 14% quando comparado com os últimos três meses de 2015. No conjunto do ano, o número de desempregados inscritos caíram 9,3%.

Figura 2.13. Desemprego

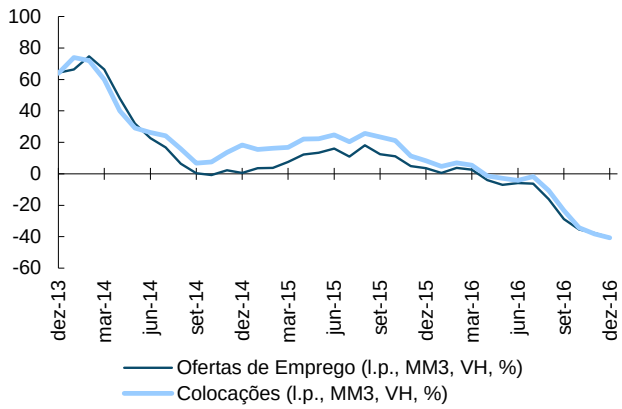


Fonte: IEFP.

Esta evolução reflete uma diminuição das colocações que, no quarto trimestre, caíram 40,7%, em termos homólogos, para as 17 mil colocações (-15,2% no conjunto do ano). Igual padrão seguiram as ofertas de emprego que, durante o último trimestre do ano decresceram 40,5% (-17,1% em 2016). Assim, o rácio entre ofertas e colocações foi, no quarto trimestre, de 72,3%, -1,3 p.p. do que no trimestre precedente.

Figura 2.14. Ofertas de Emprego e Colocações

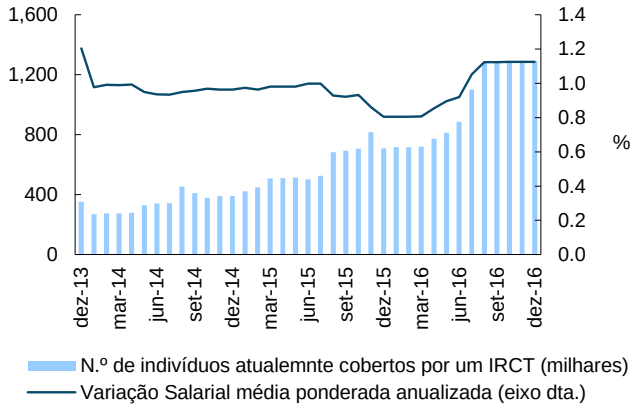
(MM3, VH)



Fonte: IEFP.

No final de 2016, estima-se que cerca de 1,293 milhões de trabalhadores se encontrassem abrangidos por Instrumentos de Regulação Coletiva de Trabalho, um aumento de aproximadamente 82,3% face a 2015. Já o aumento das remunerações médias implícitas fixou-se nos 1,1%, valor idêntico ao de novembro e 0,3 p.p. acima do registado no final de 2015.

Figura 2.15. Contratação Coletiva



Fonte: MSESS, estimativas GPEARI.

Quadro 2.5. Indicadores do Mercado de Trabalho

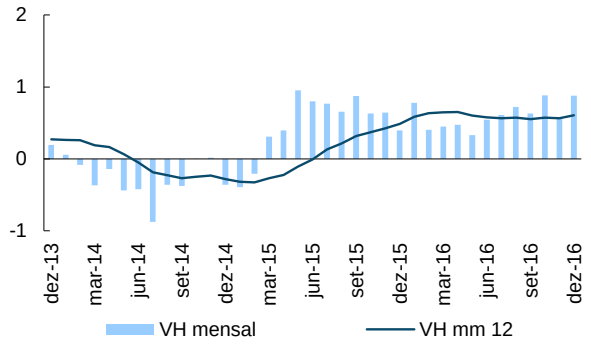
Indicador	Unidade	Fonte	2016	2015	2016				2016				
				4T	1T	2T	3T	4T	ago	set	out	nov	dez
Taxa de Desemprego*	%	INE	:	12.2	12.4	10.8	10.5	:	10.9	10.9	10.6	10.5	:
Emprego Total*	VH	"	:	1.6	0.8	0.5	1.9	:	2.0	2.0	2.0	1.8	:
Desemprego Registado (f.p.)	VH	IEFP	-13.1	-7.3	-2.6	-4.7	-8.8	-13.1	-7.0	-8.8	-9.5	-11.6	-13.1
Desempregados Inscritos (l.p.)	VH	"	-9.3	-2.0	-7.1	-3.8	-11.4	-14.0	-4.9	-12.0	-17.0	-10.0	-14.8
Ofertas de Emprego (l.p.)	VH	"	-17.1	3.6	2.6	-6.0	-28.7	-40.5	-29.0	-34.4	-41.6	-37.1	-43.1
Contratação Coletiva	VH	MSESS	1.1	0.8	0.8	0.9	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Índice do Custo do Trabalho** - Portugal	VH	INE	:	1.9	0.2	2.2	3.6	:	-	-	-	-	-
Índice do Custo do Trabalho** - AE	VH	Eurostat		1.5	1.6	0.9	:	:	-	-	-	-	-

*Valores Trimestrais do Inquérito Trimestral ao Trabalho. Valores mensais das Estimativas Mensais (ajustadas de sazonalidade). **Total, excluindo Administração Pública, Educação, Saúde e Outras Atividade; f.p. - no fim do período; l.p. ao longo do período.

Preços

No ano de 2016, o índice de Preços no Consumidor (IPC) registou uma variação homóloga de 0,6% (0,5% em 2015), com um perfil anual marcado por uma ligeira aceleração, em especial na segunda metade do ano.

Figura 2.16. Taxa de Variação do IPC
(VH, %)

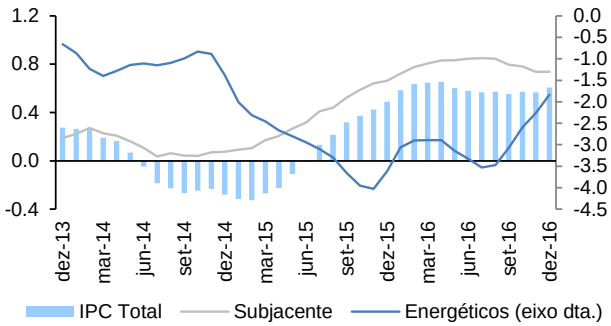


Fonte: INE.

De um modo geral, tanto o IPC dos Bens como o IPC dos Serviços partilharam esta tendência, ainda que a diferentes ritmos, tendo ambos recuperado face aos valores de 2015 (+0,1 p.p. nos Bens e +0,2 p.p. nos Serviços).

Já o IPC subjacente, isto é, o IPC excluindo produtos energéticos e alimentares não processados, cresceu 0,7%, valor idêntico ao registado em 2015. A diferença deste face ao IPC total ascende a 0,1 p.p., refletindo um forte contributo negativo dos energéticos (-1,8% em 2015), compensado por um contributo positivo dos alimentares não processados (1,6%).

Figura 2.17. Taxa de Variação do IPC (Subjacente e Energéticos)
(MM12, VH, %)



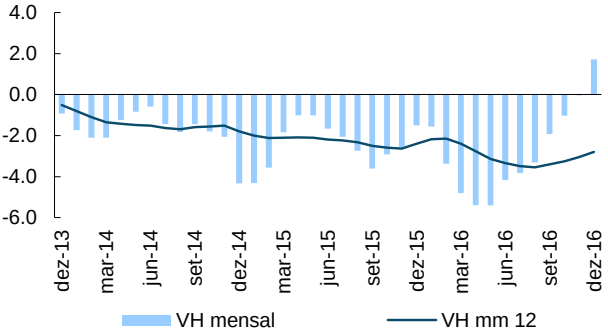
Fonte: INE.

Ao nível das classes do IPC, as que registaram a maior quebra foram a Saúde (-0,6%) e os Transportes (-0,5%), enquanto a Comunicação e as Bebidas Alcoólicas e Tabaco foram as que mais aumentaram (3,2% e 2,6, respetivamente). Ainda assim, face a 2015, o Vestuário foi a classe que registou a maior aceleração (1,7 p.p.).

A variação homóloga do Índice Harmonizado de Preços no Consumidor (IHPC) nacional, em 2015, foi de 0,6%, valor idêntico ao do IPC nacional e 0,1 p.p. acima do valor de 2015. Por seu turno, a variação homóloga do IHPC na zona euro foi de 0,2% (nulo em 2015), pelo que o diferencial do IHPC de Portugal e do IHPC médio da zona euro se fixou nos 0,4 p.p. (0,5 p.p. em 2015).

Já o Índice de preços na Produção Industrial foi marcado por uma aceleração nos últimos meses do ano. Ainda assim, a variação homóloga do IPPI fixou-se nos -2,8, abaixo dos -2,4% registados em 2015.

Figura 2.18. Taxa de Variação do IPPI
(VH, %)



Fonte: INE.

A tendência intra-anual encontra-se fortemente condicionada pela componente energética que apresentou uma forte aceleração nos últimos meses do ano (de -17,7% na primeira metade para -4,4% na segunda metade), tendo sido igualmente o agrupamento industrial que registou a maior quebra no total do ano (-10,9%). Ao nível das secções, as Indústrias de captação, tratamento e distribuição de água foram as que apresentaram o maior crescimento (2,2%), enquanto as Indústrias extrativas (-5,4%) registaram a maior quebra.

Quadro 2.6. Indicadores de Preços

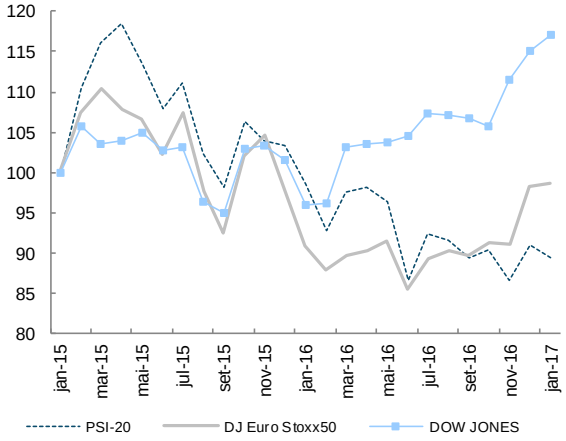
Indicador	Unidade	Fonte	2016	2016								
				abr	mai	jun	jul	ago	set	out	nov	dez
Índice de Preços no Consumidor	VC	INE	:	0.4	0.3	0.1	-0.7	-0.2	0.7	0.3	-0.5	0.0
Índice de Preços no Consumidor	VH	INE	0.6	0.5	0.3	0.5	0.6	0.7	0.6	0.9	0.6	0.9
Índice de Preços no Consumidor	VM12	"	:	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
IPC - Bens	VH	"	0.0	-0.2	-0.6	-0.1	0.1	0.3	0.1	0.1	0.1	0.6
IPC - Serviços	"	"	1.5	1.5	1.8	1.5	1.3	1.3	1.4	1.9	1.3	1.3
IPC Subjacente*	"	"	0.7	0.8	0.8	0.7	0.8	0.6	0.5	0.7	0.4	0.5
Índice de Preços na Produção industrial	VH	"	-2.8	-5.4	-5.4	-4.2	-3.8	-3.3	-1.9	-1.0	0.0	1.7
IHPC	"	"	0.6	0.5	0.4	0.7	0.7	0.8	0.7	1.1	0.5	0.9
Diferencial IHPC PT vs. AE	p.p.	Eurostat	0.4	0.7	0.5	0.6	0.5	0.6	0.3	0.6	-0.1	-0.2

* IPC subjacente exclui os bens alimentares não transformados e energéticos

Mercado de Capitais, Crédito e Taxas de Juro

No início de 2017, os índices bolsistas internacionais continuaram a apresentar uma evolução favorável, com destaque para o dos EUA, refletindo a divulgação de resultados das empresas acima do esperado e a expectativa de um crescimento económico mais forte deste país. Assim, a 27 de janeiro de 2017, o índice *Dow Jones* apreciou-se 1,7% face ao final de 2016 (+13% em termos homólogos, no final de 2016).

Figura 2.19. Índices Bolsistas
(janeiro 2015=100, fim do período)

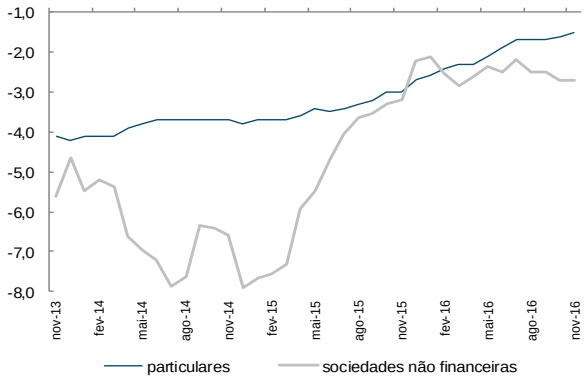


Fontes: CMVM; *Finance Yahoo*. Para janeiro, o valor é do dia 27.

Pelo contrário, o índice PSI-20 desvalorizou em finais de janeiro de 2017, tendo, no dia 27, caído 1,7% face ao final de 2016 (-12% em termos homólogos, no final de 2016).

Em novembro de 2016, a variação anual dos empréstimos ao setor privado não financeiro foi de -2,0% em termos anuais (igual ao mês precedente), resultando de uma estabilização do crédito atribuído às empresas não financeiras, em torno de -2,7%.

Figura 2.20. Empréstimos ao Setor Privado
(va, em %)

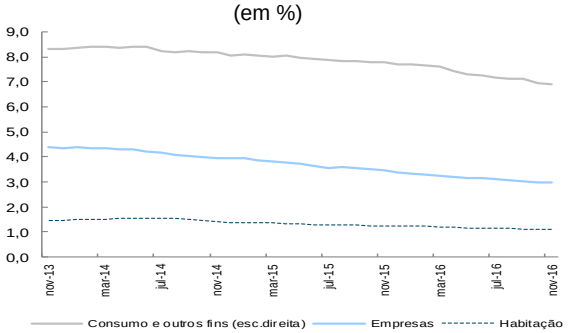


Fonte: Banco de Portugal.

Quanto ao crédito destinado aos particulares, este melhorou ligeiramente para uma variação anual de -1,5% em novembro de 2016 (-1,6% no mês precedente) devido a uma evolução mais favorável do crédito à habitação; já que o comportamento dos restantes segmentos não se alterou.

Em novembro de 2016, as taxas de juro das operações do crédito diminuíram muito ligeiramente para as empresas; enquanto para os particulares mantiveram sensivelmente o mesmo nível do mês anterior, tendência que se estendeu ao crédito à habitação.

Figura 2.21. Taxas de Juro de Empréstimos
(em %)



Fonte: Banco de Portugal.

Quadro 2.7. Indicadores Monetários e Financeiros

Indicador	Unidade	Fonte	2016	2016								
				abr	mai	jun	jul	ago	set	out	nov	dez
Yield OT 10 anos PT*	%	IGCP	3,8	3,1	3,1	3,1	2,9	3,0	3,3	3,3	3,7	3,8
Yield OT 10 – *Spread* Portugal face a Alemanha*	p.b.	"	357	288	289	319	304	308	344	316	341	357
PSI 20*	VC	CMVM	-11,9	0,6	-1,9	-10,2	6,6	-0,8	-2,4	1,2	-4,2	5,0
Empréstimos a particulares: - para habitação	va**	BP	:	-3,0	-3,0	-3,0	-3,0	-3,0	-3,0	-3,1	-3,0	:
- para consumo	va**	"	:	5,0	6,3	8,0	10,1	9,8	10,7	13,2	13,2	:
Empréstimos a empresas	va**	"	:	-2,6	-2,4	-2,5	-2,2	-2,5	-2,5	-2,7	-2,7	:
Taxa de Juro de empréstimos p/ habitação*	%	"	:	1,18	1,16	1,15	1,14	1,13	1,12	1,12	1,12	:
Taxa de Juro de empréstimos p/ empresas*	%	"	:	3,20	3,17	3,14	3,10	3,06	3,04	2,98	2,96	:

* Fim de período; ** Variação anual. Nota: As taxas de variação anual são calculadas com base na relação entre saldos de empréstimos bancários em fim de mês, ajustados de operações de titularização, e transações mensais, as quais são calculadas a partir de saldos corrigidos de reclassificações, de abatimentos ao activo e de reavaliações cambiais e de preço.

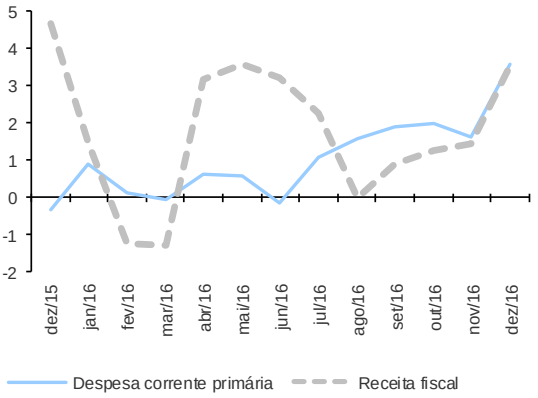
Finanças Públicas

O sector institucional das Administrações Públicas registou, no final do mês de dezembro, um saldo global negativo de 4.256 milhões de euros[1], correspondendo a uma melhoria de 497 milhões de euros relativamente ao saldo global observado no período homólogo do ano anterior. Este resultado está associado a um aumento de 2,7%[2] da receita efetiva superior ao aumento de 1,9% da despesa efetiva. No mesmo período, o saldo primário atingiu os 4.029 milhões de euros. Os subsetores das Administrações públicas registaram comportamentos diversos em matéria de saldos globais, podendo observar-se saldos globais negativos no subsetor da Administração Central (6.450 milhões de euros) e no subsetor da Administração Regional (27 milhões de euros) e saldos globais positivos no subsetor da Segurança Social (1.559 milhões de euros) e no subsetor da Administração Local (662 milhões de euros).

Estado

O subsetor Estado encerrou a execução orçamental de 2016 com um saldo global negativo de 6.157 milhões de euros. Este saldo representa um agravamento de 550 milhões de eurosface ao saldo registado no final do ano anterior. O saldo primário atingiu os 1.223 milhões de euros.

Figura 2.22. Execução Orçamental do Estado
(VHA, em %)



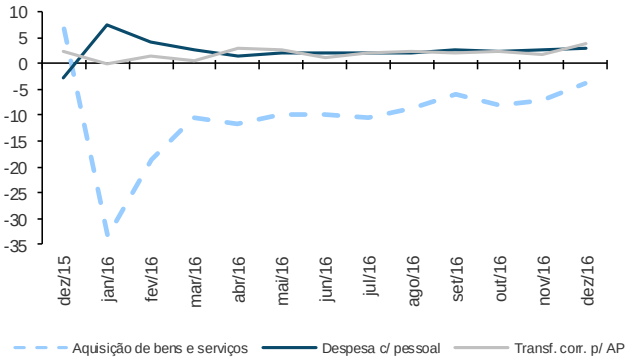
Fonte: DGO.

Para este resultado contribuiu o crescimento de 3,1% da receita efetiva, que ficou abaixo do aumento de 3,9% da despesa efetiva. Os graus de execução da receita efetiva e da despesa efetiva também se situaram abaixo dos registados no final de 2015 (em 1,9 pontos percentuais e 1,1 pontos percentuais, respetivamente).

No que diz respeito à receita efetiva destaca-se o aumento de 9,1% registado na cobrança dos impostos indiretos, que compensou a redução de 2,7% que se verificou nos impostos diretos.

Quanto à despesa efetiva, a despesa com *Juros e Outros Encargos* apresentou um crescimento de 4%, enquanto as *Despesas com o Pessoal* registaram um crescimento de 3,1%. Em contrapartida, as despesas com a *Aquisição de Bens e Serviços* apresentaram uma redução de 3,9%.

Figura 2.23. Despesa do Estado – principais componentes
(VHA, em %)



Fonte: DGO.

Quadro 2.8. Execução Orçamental do Estado

	2015	2016	2015	2016	2016			
	jan a dez		jan a dez		set	out	nov	dez
	10^6 euros		grau de execução (%)		VHA (%)			
Receita Efetiva	42 887	44 206	99,7	97,7	0,6	0,9	1,1	3,1
Receita corrente	42 751	44 102	100,2	97,9	0,6	0,9	1,2	3,2
Impostos diretos	18 246	17 746	100,2	99,1	-6,1	-5,9	-5,9	-2,7
Impostos indiretos	20 604	22 479	99,6	97,6	6,9	7,5	7,6	9,1
Despesa Efetiva	48 493	50 363	98,8	97,7	2,5	2,1	2,0	3,9
Despesa corrente	47 111	48 827	98,9	98,2	2,7	2,6	2,1	3,6
Despesa com pessoal	9 090	9 371	106,8	103,0	2,7	2,5	2,5	3,1
Aquisição bens e serviços	1 627	1 564	99,6	90,7	-6,1	-7,9	-7,2	-3,9
Subsídios	119	119	78,5	86,7	-17,8	-7,7	-7,0	-0,3
Juros	7 096	7 380	95,1	97,8	7,8	5,3	4,7	4,0
Transferências corr. p/ AP	26 339	27 378	99,8	99,9	2,1	2,4	1,7	3,9
Saldo Global	-5 606	-6 157	-	-	-	-	-	-
Saldo Primário	1 490	1 223	-	-	-	-	-	-

Fonte: DGO.

[1] Exceto se for referido o contrário, os valores indicados foram apurados numa base de caixa.
[2] Exceto se for referido o contrário, as variações em percentagem referem-se ao período homólogo do ano anterior.

Serviços e Fundos Autónomos, (SFA) incluindo as Empresas Públicas Reclassificadas (EPR)

A execução orçamental dos SFA (incluindo o SNS e as EPR) encerrou o ano de 2016 com um saldo global negativo de 293 milhões de euros, uma melhoria de 437 milhões de euros face ao ano anterior.

A melhoria do saldo deste subsetor resultou de um aumento de 2,9% da receita efetiva, superior ao aumento de 1,3% da despesa efetiva. No lado da receita efetiva destaca-se o aumento de 4,5% das receitas provenientes de*Transferências Correntes das AP*, enquanto no que diz respeito à despesa efetiva assume relevo o aumento de 5,3% das *Despesas com o Pessoal* e o aumento de 0,5% das despesas com a Aquisição *de Bens e Serviços*. O grau de execução da despesa efetiva situou-se praticamente ao nível do registado em 2015, mas o grau de execução da receita efetiva melhorou em 2,7 pontos percentuais.

As EPR incluídas neste subsector contribuíram com um saldo global negativo de 1.052 milhões de euros, o qual representa uma melhoria de 138 milhões de euros relativamente ao registado no final de ano anterior.

Este resultado é uma combinação de um aumento de 1,7% da receita efetiva (apoiada num aumento de 39% das receitas com origem em *Transferências Correntes das AP)*, com um aumento de apenas 0,2% da despesa efetiva (para o qual terá contribuído o aumento de 5,7% das *Despesas com o Pessoal*[1], a redução de 3,8% das despesas com a *Aquisição de Bens e Serviços* e a redução de 6,1% das despesas em *investimento)*.

Serviço Nacional de Saúde (SNS)

A execução orçamental do SNS (ótica dos compromissos) registou em 2016 um saldo global negativo de 199 milhões de euros. Este valor incorpora uma melhoria de 173 milhões de euros face ao valor do saldo global registado no ano anterior.

A receita efetiva do SNS registou um aumento de 3,2%, apoiado no aumento de 3,4% da receita corrente que compensou a redução das receitas de capital. A evolução da despesa efetiva (+1,2%), é resultado de um aumento de 4,9% das *Despesas com o Pessoal* e de uma redução de 0,8% da despesa com a *Aquisição de Bens e Serviços.* As *Despesas de Capital* mantiveram a tendência decrescente que se vinha a registar desde meados do ano, acabando com uma redução de 34,7% relativamente a 2015.

Caixa Geral de Aposentações (CGA)

A execução orçamental da CGA traduziu-se num saldo global positivo de 87 milhões de euros, valor que representa uma melhoria de 55 milhões de euros relativamente a 2015.

O total da receita efetiva da CGA registou um aumento de 0,7%, apoiado num aumento de 1,3% da *Comparticipação do Orçamento do Estado*, enquanto o aumento da despesa efetiva foi de apenas 0,1%, não tendo a despesa com *Pensões* sofrido alterações face aos valores da despesa registados no período homólogo.

Quadro 2.9. Execução Orçamental dos Serviços e Fundos Autónomos

	Serviços e Fundos Autónomos				*dos quais:* Empresas Públicas Reclassificadas			
	2015	2016			2015	2016		
	jan a dez				jan a dez			
	10^6 euros	10^6 euros	Grau de execução (%)	VHA (%)	10^6 euros	10^6 euros	Grau de execução (%)	VHA (%)
Receita Efetiva	28 206	29 017	99,3	2,9	8 969	9 123	98,8	1,7
Contribuições p/ Seg. Social, CGA e ADSE	3 989	4 062	102,2	1,8	-	-	-	-
Transferências correntes das Adm. Públicas	16 387	17 127	96,6	4,5	633	880	85,4	39,0
Despesa Efetiva	28 936	29 310	96,8	1,3	10 159	10 175	93,6	0,2
Despesa com pessoal	6 128	6 454	99,8	5,3	3 436	3 633	101,7	5,7
Aquisição de bens e serviços	6 908	6 940	100,6	0,5	3 371	3 244	95,8	-3,8
Transferências correntes	11 161	11 433	101,0	2,4	94	133	69,5	41,1
Saldo Global	- 730	- 293	-	-	-1 190	-1052	-	-

Fonte: DGO.

Quadro 2.10. Execução Financeira do SNS e Orçamental da CGA

	Serviço Nacional de Saúde					Caixa Geral de Aposentações			
	2015	2016				2015	2016		
	jan a dez					jan a dez			
	10^6 euros		VHA (%)	Grau de execução (%)		10^6 euros		VHA (%)	Grau de execução (%)
Receita Efetiva	8 654	8 932	3,2	102,0	Receita Efetiva	9 724	9 790	0,7	100,3
Receita fiscal	108	107	-0,5	103,0	Contribuições p/ a CGA	3984	4 058	1,8	102,2
Outra receita corrente	8 510	8 804	3,5	102,5	Quotas e contribuições	3 869	3 958	2,3	102,3
Receita de capital	36	21	-42,1	33,2	Transferências correntes do OE	4 858	4 926	1,4	99,8
Despesa Efetiva	9 025	9 131	1,2	102,2	Comparticipação do OE	4 604	4 663	1,3	100,0
Despesa com pessoal	3 467	3 639	4,9	101,3	Compensação por pagamento de pensões	255	263	3,2	99,6
Aquisição de bens e serviços	5 322	5 278	-0,8	102,6	Despesa Efetiva	9 692	9 703	0,1	99,5
Despesa de capital	149	98	-34,7	88,8	Pensões	9 522	9 524	0,0	99,5
Saldo Global	- 372	- 199	-	-	Saldo Global	32	87	:	-

Fontes: Administração Central do Sistema de Saúde e DGO.

[1] As EPR englobam os *Hospitais EPE* onde, para além de se repercutir a política de reversão gradual da redução remuneratória na Administração Pública, se reflete a passagem das 40 horas às 35 horas de trabalho semanais.

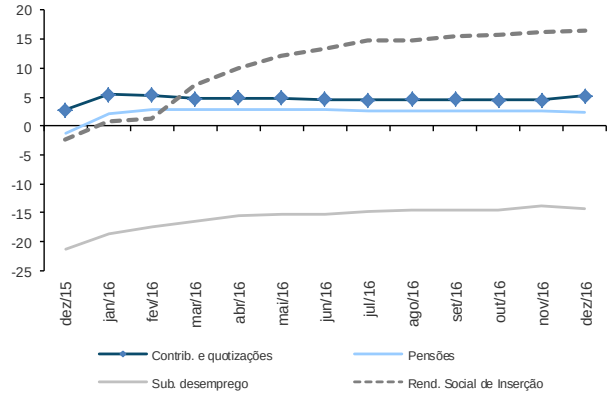
Segurança Social

A execução do orçamento da Segurança Social registou, no final de dezembro, um saldo global de 1.559 milhões de euros. Este valor representa uma melhoria de 522 milhões de euros relativamente ao saldo global observado no período homológo.

Este resultado apoia-se num aumento de 4,5% da receita efetiva, superior ao crescimento de 2,5% registado pela despesa efetiva.

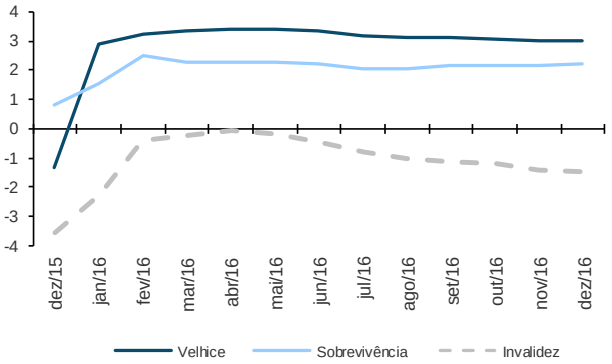
A evolução da receita efetiva assenta no aumento de 5,2% registado nas receitas com origem nas *Contribuições e Quotizações*, enquanto o aumento de 2,5% da despesa efetiva reflete o aumento de 2,5% da despesa com *Pensões* e o aumento de 3,7% da despesa com *Prestações e Ação Social*. Em contrapartida, manteve-se a tendência observada ao longo do ano de redução da despesa com o *Subsídio de Desemprego e Apoio ao Emprego*, que registou uma redução de 14,3% relativamente a 2015.

Figura 2.24. Execução Orçamental da Seg. Social
(VHA, em %)



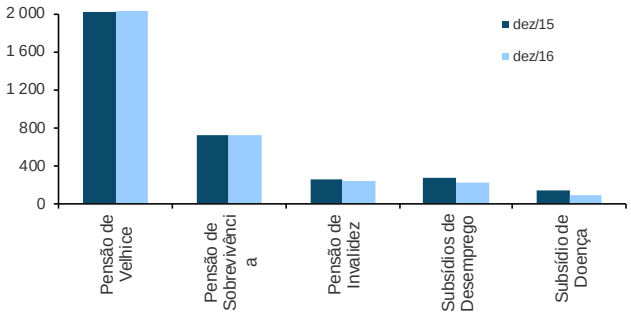
Fonte: DGO.

Figura 2.25. Despesa em Pensões da Seg. Social
(VHA, em %)



Fonte: DGO.

Figura 2.26. Número de Pensões e Subsídios Atribuídos
(milhares, em final do mês)



Fonte: MTSSS.

Quadro 2.11. Execução Orçamental da Segurança Social

	Segurança Social			
	2015	2016		
	jan a dez			
	10^6 euros	10^6 euros	VHA	Grau de execução (%)
Receita Efetiva	24 602	25 705	4,5	97,9
Contribuições e quotizações	14 043	14 776	5,2	99,6
Transferências correntes da Adm. Central *	9 027	7 708	-14,6	100,0
Despesa Efetiva	23 565	24 146	2,5	96,1
Pensões	15 266	15 645	2,5	99,3
Pensões de velhice do reg. subst. bancário	488	479	-1,8	99,4
Subsídio de desemp. e apoio ao emprego	1 761	1 510	-14,3	92,2
Prestações e ação social	3 934	4 080	3,7	97,5
Saldo Global	1 037	1 559	-	-

* Não inclui IVA social e transferências no âmbito do Plano de Emergência Social.
Fonte: DGO.

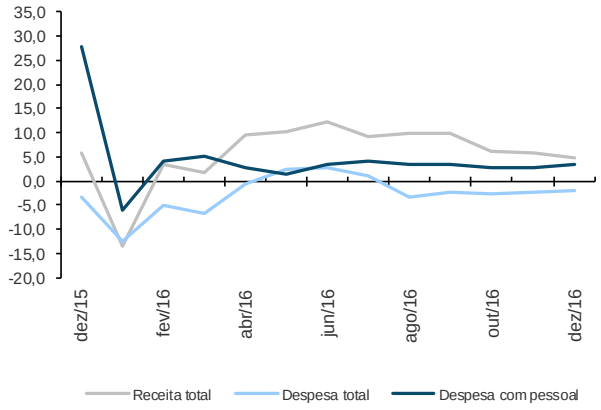
Administração Regional

O subsetor da Administração Regional encerrou 2016 com um saldo global negativo da ordem dos 27 milhões de euros. Apesar de negativo, este saldo global representa uma melhoria de 167 milhões de euros relativamente ao saldo apurado em 2015.

A execução orçamental do subsetor caracterizou-se por um aumento de 4,7% da receita efetiva, acompanhada de uma redução de 1,9% da despesa efetiva.

A evolução da receita efetiva foi marcada por um crescimento acentuado das transferências correntes recebidas e de um aumento de 1,4% das *Receitas Fiscais*. Quanto à despesa efetiva, o aumento das *Despesas com o Pessoal* (3,4%) e o aumento da despesa com a *Aquisição de Bens e Serviços* (2,2%) foi mais do que compensado com a redução das despesas com transferências correntes (1,7%) e da redução das despesas de *Investimento* (23,6%).

Figura 2.27. Execução Orçamental da Administração Regional
(VHA, em %)



Fonte: DGO.

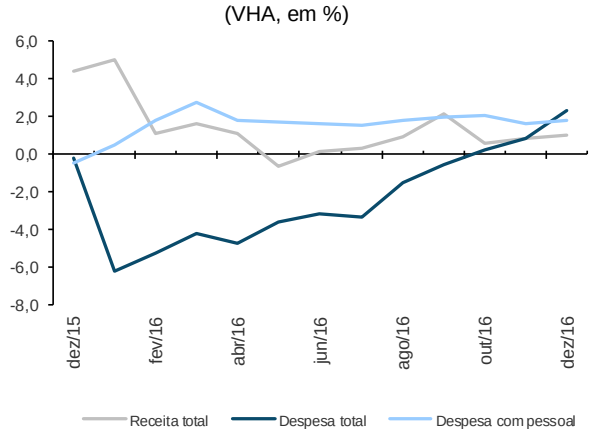
Administração Local

O saldo global no final de dezembro do subsetor da Administração Local foi de 662 milhões de euros. Apesar de significar uma melhoria de 57 milhões de euros relativamente ao mês anterior, este saldo global representa uma deterioração de 79 milhões de euros relativamente ao saldo global observado no final do ano anterior.

Este resultado tem na base um crescimento de 1,0% da receita efetiva que não foi suficiente para compensar o aumento de 2,3% da despesa efetiva.

A evolução da despesa efetiva está associada com o aumento de 1,8% das *Despesas com o Pessoal*, com o aumento de 5,8% das despesas com a *Aquisição de Bens e Serviços* e com o aumento de 9% das despesas com *Transferências correntes*. Em contrapartida, as despesas de *Investimento* apresentaram uma redução de 10,8%. Na evolução da receita efetiva destaca-se, essencialmente, o crescimento de 3,3% das receitas provenientes da cobrança dos impostos, essencialmente derrama (+32,9% e IMT (12,3%), uma vez que o IMI diminuiu 3,5% face a 2015.

Figura 2.28. Execução Orçamental da Administração Local
(VHA, em %)



Fonte: DGO.

Quadro 2.12. Execução Orçamental das Administrações Local e Regional

	Administração Regional			Administração Local		
	2015	2016		2015	2016	
	jan a dez			jan a dez		
	10^6 euros		VHA (%)	10^6 euros		VHA (%)
Receita Efetiva	2 452	2 568	4,7	7 245	7 317	1,0
Impostos	1 508	1 529	1,4	2 688	2 775	3,3
Transferências correntes	91	513	-	2 504	2 550	1,8
Despesa Efetiva	2 646	2 595	-1,9	6 504	6 655	2,3
Pessoal	985	1 019	3,4	2 216	2 255	1,8
Aquisição de bens e serviços	736	752	2,2	2 050	2 169	5,8
Transferências correntes	217	213	-1,7	549	598	9,0
Investimento	225	172	-23,6	1 176	1 049	-10,8
Saldo global	- 194	- 27	-	741	662	-

Fonte: DGO.

Dívida Pública

Dívida Pública das Administrações Públicas (ótica de Maastricht)

A dívida consolidada do sector das Administrações Públicas (critério de Maastricht) atingiu o montante de 241.800 milhões de euros no final de novembro. Este valor significa uma redução de 1.275 milhões de euros relativamente ao mês anterior (0,5%) mas incorpora um aumento de 10.216 milhões de euros face ao final de 2015 (4,4%).

No final de novembro mantinha-se a estrutura da dívida consolidada do sector, com a Administração Central a deter a maioria da dívida pública. Este subsector foi também o principal responsável pela redução e pelo aumento da dívida relativamente ao mês anterior e ao final de 2015, respetivamente.

A Administração Central detinha no final de novembro depósitos no montante de 18.078 milhões de euros (menos 3,2% do que no mês anterior e mais 36,4% relativamente a dezembro de 2015).

Quadro 2.13. Dívida das Administrações Públicas
(milhões de euros)

	2015 dez	2016 out	2016 nov
Administrações Públicas	231 584	243 075	241 800
Por subsector:			
Administração Central	233 126	245 991	244 718
Administração Regional e Local	10 900	10 614	10 571
Segurança Social	2	2	2
Consolidação entre subsectores	12 443	13 532	13 492
por memória:			
Depósitos da Administração Central	13 252	18 676	18 078

Fonte: Banco de Portugal.

Dívida não Financeira das Administrações Públicas

Quadro 2.14. Dívida não Financeira das AP
(milhões de euros)

	2015 dez	2016 nov	2016 dez
Administrações Públicas	2 196	2 346	1 812
Por subsector:			
Administração Central	290	578	313
Administração Regional	638	531	409
Administração Local	1 267	1 237	1 090
Segurança Social	0	0	0

Fonte: DGO.

A dívida não financeira das Administrações Públicas sofreu uma redução significativa relativamente ao mês anterior e face a dezembro de 2015. O montante da dívida situou-se em 1.812 milhões de euros, menos 534 milhões de euros do que no mês anterior e menos 384 milhões face a 2015, representando uma redução de 22,8% e 17,5%, respetivamente.

Quadro 2.15. Pagamentos em Atraso
(milhões de euros)

	2015 dez	2016 nov	2016 dez
Administrações Públicas	920	1 159	855
Por subsector:			
Administração Central (excl. saúde)	13	26	17
SNS	4	4	6
Hospitais EPE	451	757	544
Empresas Públicas Reclassificadas	15	16	16
Administração Regional	194	180	120
Administração Local	242	176	152
Segurança Social	0	0	0
Outras Entidades	1	3	3
Empresas públicas não reclassificadas	1	3	3
Adm. Públicas e outras entidades	921	1 162	858

Fonte: DGO.

A estrutura da dívida não financeira manteve-se inalterada, com a Administração Local a deter o principal peso (60,2%).

No final de dezembro os pagamentos em atraso no sector das Administrações Públicas tinham registado uma redução de 26,2% em relação ao mês anterior, e uma redução de 7% relativamente a 2015.

O montante de 855 milhões de euros de pagamentos em atraso registados em dezembro compara com o montante de 1.159 milhões de euros do mês anterior e com 920 milhões de euros registados no final de 2015.

A estrutura dos pagamentos em atraso manteve-se inalterada com a maior parte concentrada nos hospitais EPE (63,6%).

Dívida Direta do Estado

A dívida direta do Estado foi de 236.283 milhões de euros, no final de dezembro, reduzindo 1.206 milhões de euros (0,5%) relativamente ao mês anterior.

A dívida transacionável continua a representar mais de metade do total da dívida (57,4%). O PAEF é a segunda componente da dívida com maior peso (28,8%).

Quadro 2.16. Movimento da Dívida Direta do Estado
(milhões de euros)

	30/nov/16	dez/16			31/dez/16
	Saldo	Emissões	Amortiz.	Outros	Saldo
Transacionável	136 012	2 767	223	6	135 622
da qual: Bilhetes do Tesouro	15 429	1 567	0	0	15 136
da qual: Obrigações Tesouro	110 210	:	223	10	110 076
Não Transacionável	33 100	2 504	2 111	-	32 705
da qual: Cert.Aforro e do Tesouro	23 915	401	62	0	24 203
da qual: CEDIC e CEDIM	6 009	1 863	1 449	0	5 277
Prog. de Ajustamento Económico	68 378	0	0	- 19	67 956
Total	237 489	5 271	2 334	- 13	236 283

Fonte: IGCP.

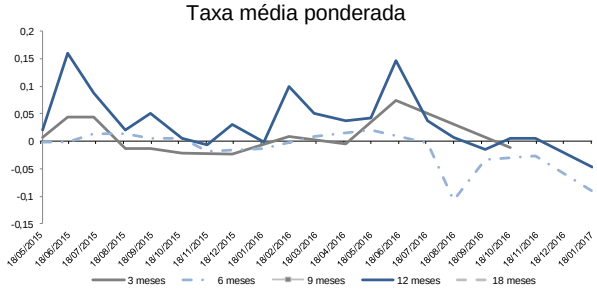
Emissões e Amortizações de Dívida

Em janeiro de 2017, o IGCP, E.P.E., colocou no mercado, sob a forma de leilão, duas emissões de Bilhetes do Tesouro, com as seguintes características:

- em 18 de janeiro, um montante de 1.664 milhões de euros, com maturidade em janeiro de 2018 e uma taxa média ponderada de -0,047% (0,005% na última colocação para uma maturidade idêntica);
- na mesma data, um montante de 385 milhões de euros, com maturidade em julho de 2017, e uma taxa média ponderada de -0,091% (-0,027% para a mesma maturidade na última colocação).

Em janeiro foi ainda realizada uma colocação de Obrigações do Tesouro no montante de 3.000 milhões de euros, com maturidade em abril de 2027 e uma taxa média de colocação de 4,227%.

Figura 2.29. Emissões de BT
Taxa média ponderada



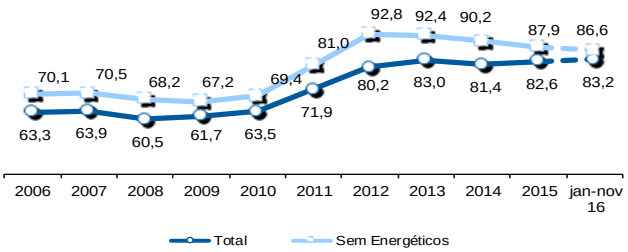
Fonte: IGCP.

3. Comércio Internacional [1]

Evolução global [2]

Os resultados preliminares recentemente divulgados pelo Instituto Nacional de Estatística, nos primeiros onze meses de 2016, apontam para uma estagnação das exportações de mercadorias e um aumento das importações de 0,2% [3], em termos homólogos. Nesse período, o défice da balança comercial de mercadorias (fob/cif) agravou-se 0,8%. Excluindo os produtos energéticos, as exportações cresceram 1,9% e as importações registaram uma variação homóloga de 4,4% (Quadro 3.1).

Figura 3.1. Evolução da Taxa de Cobertura (fob/cif) das Importações pelas Exportações de Mercadorias
(%)



Fonte: GEE, com base nos dados das estatísticas do Comércio Internacional de Mercadorias do INE (últimas versões disponíveis à data da publicação para o período considerado). Os dados do comércio intracomunitário incluem estimativas para as não respostas assim como para as empresas que se encontram abaixo dos limiares de assimilação.

Quadro 3.1. Evolução da Balança Comercial
(valores acumulados)

Intra + Extra-UE (milhões de Euros)	janeiro a novembro			VH	
	2015	2016	VH	Últimos 3 meses	Últimos 12 meses
Exportações (fob)	46.191	46.209	0,0	3,5	-0,1
Importações (cif)	55.483	55.572	0,2	2,8	0,2
Saldo (fob-cif)	-9.292	-9.363	0,8	-0,3	1,6
Cobertura (fob/cif)	83,3	83,2	-	-	-
Sem energéticos:					
Exportações (fob)	42.622	43.445	1,9	3,7	1,9
Importações (cif)	48.071	50.194	4,4	4,4	4,6
Saldo (fob-cif)	-5.449	-6.748	23,8	9,2	25,2
Cobertura (fob/cif)	88,7	86,6	-	-	-
Extra-UE (milhões de Euros)	**janeiro a novembro**			VH	
	2015	2016	VH	Últimos 3 meses	Últimos 12 meses
Exportações (fob)	12.509	11.268	-9,9	5,3	-9,8
Importações (cif)	13.102	12.232	-6,6	-4,4	-6,9
Saldo (fob-cif)	-593	-965	62,8	-144,5	57,4
Cobertura (fob/cif)	95,5	92,1	-	-	-

Fonte: GEE, com base nos dados das estatísticas do Comércio Internacional de Mercadorias do INE (últimas versões disponíveis à data da publicação para o período considerado). Os dados do comércio intracomunitário incluem estimativas para as não respostas assim como para as empresas que se encontram abaixo dos limiares de assimilação.
Notas:
Exportações: somatório das exportações para o espaço comunitário com as exportações para os Países Terceiros. Importações: somatório das importações com origem nos países comunitários com as importações provenientes dos Países Terceiros.

Nos primeiros onze meses de 2016, as exportações representam 83,2% das importações, que se traduz numa quebra de 0,1 p.p. na taxa de cobertura das importações pelas exportações, em termos homólogos. Excluindo os produtos energéticos, as exportações representaram 86,6% das importações (-2,1 p.p. que em igual período do ano anterior).

Quadro 3.2. Balança Comercial: mês de novembro

Valores em milhões de Euros

janeiro a novembro	2015	2016	TVH
Intra+Extra UE			
Exportações (fob)	46 191	46 209	0,0
Importações (cif)	55 483	55 572	0,2
Saldo (fob-cif)	- 9 292	- 9 363	0,8
Cobertura (fob/cif)	83,3	83,2	-
Intra UE			
Exportações (fob)	33 682	34 942	3,7
Importações (cif)	42 381	43 340	2,3
Saldo (fob-cif)	- 8 699	- 8 398	-3,5
Cobertura (fob/cif)	79,5	80,6	-
Extra UE			
Exportações (fob)	12 509	11 268	-9,9
Importações (cif)	13 102	12 232	-6,6
Saldo (fob-cif)	- 593	- 965	62,8
Cobertura (fob/cif)	95,5	92,1	-

Fonte: GEE, com base nos dados das estatísticas do Comércio Internacional do INE (últimas versões disponíveis à data da publicação para o período considerado). Os dados do comércio intracomunitário incluem estimativas para as não respostas assim como para as empresas que se encontram abaixo dos limiares de assimilação.
Nota:
Exportações: somatório das exportações para o espaço comunitário com as exportações para os Países Terceiros. Importações: somatório das importações com origem nos países comunitários com as importações provenientes dos Países Terceiros.

Nos primeiros onze meses de 2016, o défice da balança comercial de mercadorias Intra UE recuperou 3,5% em termos homólogos, com as exportações de mercadorias a crescerem 3,7% e as importações 2,3%. O défice da balança comercial de mercadorias Extra UE agravou-se 62,8% (Quadro 3.2).

Quadro 3.3. Evolução Mensal e Trimestral

Intra+Extra UE (milhões de Euros)	IMPORTAÇÕES (Cif)			EXPORTAÇÕES (Fob)		
	2015	2016	TVH	2015	2016	TVH
jan	4 442	4 365	-1,7	3 777	3 677	-2,7
fev	4 507	4 714	4,6	3 954	4 026	1,8
mar	5 300	5 311	0,2	4 402	4 248	-3,5
abr	5 189	4 874	-6,1	4 243	4 145	-2,3
mai	5 361	5 158	-3,8	4 238	4 223	-0,4
jun	5 425	5 393	-0,6	4 554	4 469	-1,8
jul	5 435	5 065	-6,8	4 704	4 484	-4,7
ago	4 232	4 656	10,0	3 320	3 486	5,0
set	5 232	5 354	2,3	4 140	4 423	6,8
out	5 326	5 228	-1,8	4 526	4 366	-3,5
nov	5 033	5 454	8,4	4 333	4 663	7,6
dez	4 827			3 634		
1º Trim	14 249	14 390	1,0	12 133	11 951	-1,5
2º Trim	15 975	15 426	-3,4	13 035	12 837	-1,5
3º Trim	14 900	15 075	1,2	12 164	12 393	1,9
4º Trim	15 186			12 493		

Fonte: GEE, com base nos dados das estatísticas do Comércio Internacional de Mercadorias do INE (últimas versões disponíveis à data da publicação para o período considerado). Os dados do comércio intracomunitário incluem estimativas para as não respostas assim como para as empresas que se encontram abaixo dos limiares de assimilação.
Nota:
Exportações: somatório das exportações para o espaço comunitário com as exportações para os Países Terceiros. Importações: somatório das importações com origem nos países comunitários com as importações provenientes dos Países Terceiros.

[1] Informação mais desagregada pode ser consultada em www.gee.min-economia.pt ("Síntese Estatística do Comércio Internacional, nº1/2017"). [2] Os dados de base do comércio internacional (Intra e Extra UE) divulgados para o mês de novembro de 2016 correspondem a uma versão preliminar. Os dados do comércio intracomunitário incluem estimativas para as não respostas (valor das transações das empresas para as quais o INE não recebeu ainda informação) assim como para as empresas que se encontram abaixo dos limiares de assimilação (valor anual das operações intracomunitárias abaixo do qual os operadores são dispensados da declaração periódica estatística Intrastat, limitando-se à entrega da declaração periódica fiscal: no caso de Portugal, 250 mil euros para as importações da UE e 250 mil para as exportações para a UE, em 2013). Por outro lado, a atual metodologia considera, para além do confronto regular entre as declarações Intrastat e do IVA, a comparação com os dados com a IES.
[3] Exportações: somatório das exportações para o espaço comunitário com as exportações para os Países Terceiros. Importações: somatório das importações com origem nos países comunitários com as importações provenientes dos Países Terceiros.

Exportações de Mercadorias

Nos primeiros onze meses de 2016, as exportações de mercadorias estagnaram. Excluindo os produtos energéticos, registaram uma variação homóloga positiva de 1,9%.

Entre janeiro e novembro de 2016, destaca-se o contributo positivo das "Máquinas e aparelhos e suas partes" (+0,9 p.p.), dos "Têxteis, vestuário e seus acessórios" (+0,5 p.p.), dos "Produtos acabados diversos" e dos "Agroalimentares" (ambos com +0,4 p.p.). As "Máquinas e aparelhos e suas partes" são o grupo de produtos com maior peso relativo nas exportações de mercadorias (15,4%), seguidos dos "Agroalimentares" e "Químicos" com 13% e 12,9%, respetivamente.

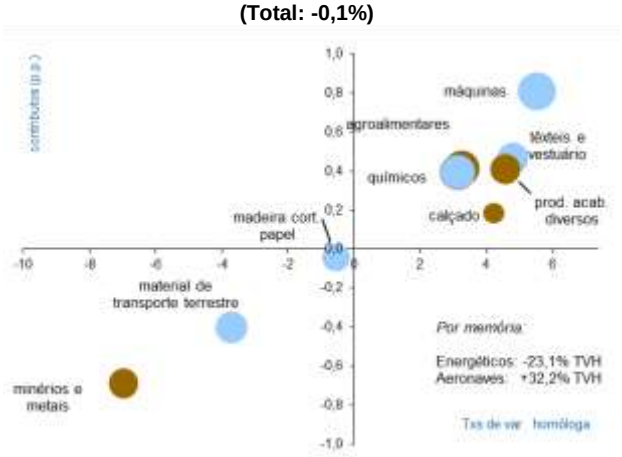
A Figura 3.2 apresenta os contributos dos diversos grupos de produtos para a ligeira quebra das exportações (-0,1%), no último ano a terminar em novembro de 2016.

Nesse período, o desempenho da maioria dos grupos de produtos contrariou essa quebra. As "Máquinas e aparelhos e suas partes" e os "Têxteis, vestuário e seus acessórios" registaram o maior contributo positivo (+0,8 p.p. e +0,5 p.p., respetivamente). De destacar ainda o comportamento dos "Agroalimentares", "Químicos" e "Produtos acabados diversos" (todos com +0,4 p.p.).

Figura 3.2. Contributos para o Crescimento das Exportações por Grupos de Produtos (p.p.)

Últimos 12 meses a terminar em novembro de 2016

(Total: -0,1%)



Quadro 3.4. Exportações * de Mercadorias por Grupos de Produtos

(Fob) **Intra + Extra UE**

Grupos de Produtos	Milhões de Euros jan-nov		Estrutura (%) Anual		Estrutura (%) jan-nov		Tax. variação e contributos últimos 12 meses [1] VH [2]	Tax. variação e contributos últimos 12 meses [1] contrib. p.p. [3]	Tax. variação e contributos jan-nov VH	Tax. variação e contributos jan-nov contrib. p.p. [3]
	2015	2016	2010	2015	2015	2016				
Total das Exportações	**46 191**	**46 209**	**100,0**	**100,0**	**100,0**	**100,0**	**-0,1**	**-0,1**	**0,0**	**0,0**
Agro-alimentares	5 824	6 012	11,7	12,8	12,6	13,0	3,3	0,4	3,2	0,4
Energéticos	3 570	2 764	6,4	7,6	7,7	6,0	-23,1	-1,8	-22,6	-1,7
Químicos	5 828	5 982	11,9	12,6	12,6	12,9	3,1	0,4	2,6	0,3
Madeira, cortiça e papel	3 712	3 681	9,0	8,1	8,0	8,0	-0,6	0,0	-0,8	-0,1
Têxteis, vestuário e seus acessórios	4 502	4 719	10,4	9,8	9,7	10,2	4,8	0,5	4,8	0,5
Calçado, peles e couros	2 013	2 092	4,1	4,4	4,4	4,5	4,2	0,2	3,9	0,2
Minérios e metais	4 489	4 231	10,7	9,7	9,7	9,2	-7,0	-0,7	-5,7	-0,6
Máquinas e aparelhos e suas partes	6 725	7 131	15,1	14,6	14,6	15,4	5,5	0,8	6,0	0,9
Material de transp. terrestre e suas partes	5 119	4 911	11,6	10,9	11,1	10,6	-3,7	-0,4	-4,1	-0,4
Aeronaves, embarcações e suas partes	259	355	0,6	0,6	0,6	0,8	32,2	0,2	36,8	0,2
Produtos acabados diversos	4 152	4 331	8,6	9,0	9,0	9,4	4,6	0,4	4,3	0,4
Por memória:										
Total sem energéticos	42 622	43 445	93,6	92,4	92,3	94,0	1,9	1,7	1,9	1,8

Fonte: GEE, com base nos dados das estatísticas do Comércio Internacional de Mercadorias do INE (últimas versões disponíveis à data da publicação para o período considerado). Os dados do comércio intracomunitário incluem estimativas para as não respostas assim como para as empresas que se encontram abaixo dos limiares de

Notas:

Exportações: somatório das exportações para o espaço comunitário com as exportações para os Países Terceiros.

[1] Últimos 12 meses a terminar em novembro de 2016.

[2] (dez 15-nov 16)/(dez 14-nov 15) x 100 - 100.

[3] Contributos para a taxa de crescimento das exportações - análise shift-share : (TVH) x (peso no período homólogo anterior) ÷ 100.

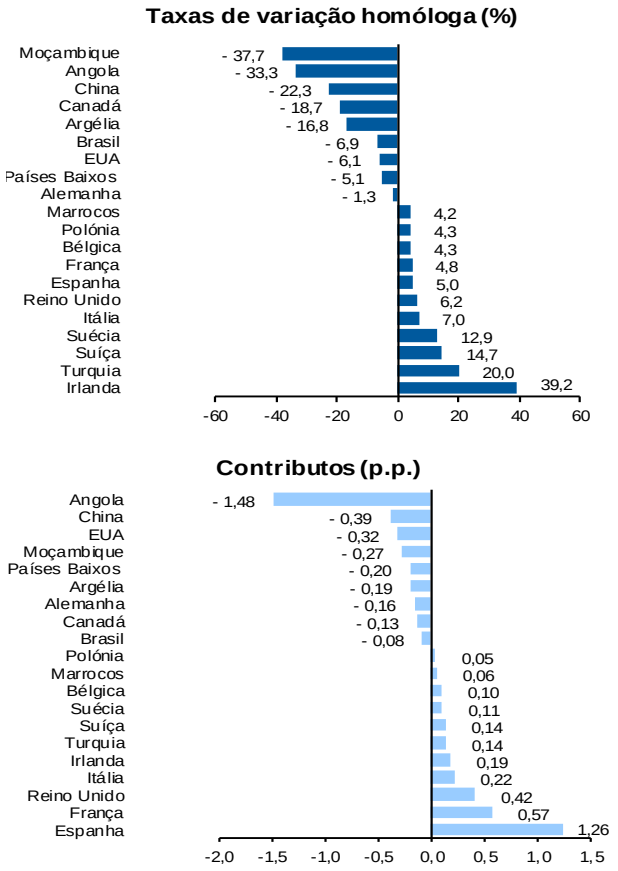
Nos primeiros onze meses de 2016, as exportações para a UE cresceram 3,7%, em termos homólogos. As exportações com destino aos países da UE-15 registaram uma taxa de variação homóloga de 3,5% enquanto as exportações com destino aos Países do Alargamento registaram um crescimento superior (8,1%). As exportações para países terceiros registaram um decréscimo significativo (-9,9%) (Quadro 3.5).

As exportações de mercadorias para Espanha registaram o maior contributo Intra UE-15 (+1,3 p.p.), seguidas das exportações para a França e o Reino Unido (+0,6 p.p. e +0,4 p.p., respetivamente).

No último ano a terminar em novembro de 2016, as exportações para os países Intra UE cresceram 3,6%, em termos homólogos (3,3% no caso da UE-15). As exportações para Espanha (+1,3 p.p.) e a França (+0,6 p.p.) registaram os maiores contributos positivos. Entre os países terceiros, destaca-se o crescimento das exportações para a Turquia (+20%) e Suíça (14,7%). No mesmo período, assume maior relevo o decréscimo das exportações com destino a Moçambique (-37,7%), Angola (-33,3%) e China (-22,3%) (Figura 3.3).

Figura 3.3. Taxas de Crescimento das Exportações para uma Seleção de Mercados e Contributos

Últimos 12 meses a terminar em novembro de 2016



Fonte: Quadro 3.5. Evolução das Exportações de Mercadorias com destino a uma Seleção de Mercados

Quadro 3.5. Evolução das Exportações de Mercadorias com Destino a uma Seleção de Mercados

Intra + Extra-UE (Fob)

Valores em milhões de Euros

Destino	jan-nov		Estrutura (%) anual		Estrutura (%) jan-nov		Taxas de variação e contributos 12 meses [1] VH [2]	12 meses [1] contrib. p.p. [3]	Taxas de variação e contributos jan-nov VH	jan-nov contrib. p.p. [3]
	2015	2016	2010	2015	2015	2016				
TOTAL	**46 191**	**46 209**	**100,0**	**100,0**	**100,0**	**100,0**	**-0,1**	**-0,1**	**0,0**	**0,0**
Intra UE	**33 682**	**34 942**	**75,4**	**72,8**	**72,9**	**75,6**	**3,6**	**2,6**	**3,7**	**2,7**
dos quais:										
UE-15	**32 025**	**33 151**	**72,3**	**69,2**	**69,3**	**71,7**	**3,3**	**2,3**	**3,5**	**2,4**
Espanha	11553	12 153	27,0	25,0	25,0	26,3	5,0	1,3	5,2	1,3
França	5 588	5 852	12,0	12,1	12,1	12,7	4,8	0,6	4,7	0,6
Alemanha	5 540	5 460	13,0	11,8	12,0	11,8	-1,3	-0,2	-1,4	-0,2
Reino Unido	3 110	3 283	5,5	6,7	6,7	7,1	6,2	0,4	5,6	0,4
Países Baixos	1835	1715	3,9	4,0	4,0	3,7	-5,1	-0,2	-6,5	-0,3
Itália	1464	1576	3,7	3,2	3,2	3,4	7,0	0,2	7,7	0,2
Bélgica	1050	1135	2,6	2,3	2,3	2,5	4,3	0,1	8,2	0,2
Suécia	380	443	1,0	0,8	0,8	1,0	12,9	0,1	16,4	0,1
Irlanda	222	312	0,3	0,5	0,5	0,7	39,2	0,2	40,9	0,2
Alargamento	**1657**	**1791**	**3,2**	**3,6**	**3,6**	**3,9**	**8,1**	**0,3**	**8,1**	**0,3**
Polónia	510	526	0,9	1,1	1,1	1,1	4,3	0,0	3,2	0,0
Extra UE	**12 509**	**11 268**	**24,6**	**27,2**	**27,1**	**24,4**	**-9,8**	**-2,7**	**-9,9**	**-2,7**
dos quais:										
EUA	2 390	2 239	3,5	5,2	5,2	4,8	-6,1	-0,3	-6,3	-0,3
Angola	1955	1335	5,1	4,2	4,2	2,9	-33,3	-1,5	-31,7	-1,3
China	781	614	0,6	1,7	1,7	1,3	-22,3	-0,4	-21,4	-0,4
Marrocos	622	638	0,8	1,4	1,3	1,4	4,2	0,1	2,5	0,0
Brasil	523	496	1,2	1,1	1,1	1,1	-6,9	-0,1	-5,1	-0,1
Argélia	517	424	0,6	1,1	1,1	0,9	-16,8	-0,2	-18,0	-0,2
Suíça	429	497	0,9	0,9	0,9	1,1	14,7	0,1	16,0	0,1
Turquia	318	369	0,7	0,7	0,7	0,8	20,0	0,1	16,1	0,1
Canadá	336	264	0,5	0,7	0,7	0,6	-18,7	-0,1	-21,6	-0,2
Moçambique	325	194	0,4	0,7	0,7	0,4	-37,7	-0,3	-40,3	-0,3
Por memória:										
OPEP [4]	3 022	2 253	7,0	6,6	6,5	4,9	-26,4	-1,8	-25,5	-1,7
PALOP	2 599	1906	6,5	5,6	5,6	4,1	-27,8	-1,6	-26,7	-1,5
EFTA	637	678	1,1	1,4	1,4	1,5	6,1	0,1	6,5	0,1

Fonte: GEE, com base nos dados das estatísticas do Comércio Internacional de Mercadorias do INE (últimas versões disponíveis à data da publicação para o período considerado). Os dados do comércio intracomunitário incluem estimativas para as não respostas assim como para as empresas que se encontram abaixo dos limiares de assimilação.

Notas:

Exportações: somatório das exportações para o espaço comunitário com as exportações para os Países Terceiros.

Países ordenados por ordem decrescente de valor no ano de 2015.

[1] Últimos 12 meses a terminar em novembro de 2016.

[2] (dez 15-nov 16)/(dez 14-nov 15) x 100 - 100.

[3] Contributos para a taxa de crescimento das exportações - análise shift-share: (TVH) x (peso no período homólogo anterior) ÷ 100.

[4] Inclui Angola.

Importações de Mercadorias

De janeiro a novembro de 2016, as importações de mercadorias registaram um acréscimo de 0,2% em termos homólogos (Quadro 3.6).

Destaca-se o contributo positivo das importações de "Material de transporte terrestre e suas partes" (1,1 p.p.), "Máquinas e aparelhos e suas partes" (0,9 p.p.), "Aeronaves, embarcações e suas partes" (0,6 p.p.), "Agroalimentares" (0,5 p.p.) e "Produtos acabados diversos" (0,4 p.p.).

A UE-28 mantém-se como principal mercado de origem das importações portuguesas (78%).

Nos primeiros onze meses de 2016, as importações de mercadorias provenientes do mercado comunitário cresceram 2,3%, em termos homólogos, com as provenientes dos países da UE-15 a crescerem 2%, em termos homólogos. As importações provenientes dos países do Alargamento registaram um crescimento de 9,1%, em termos homólogos.

As importações de mercadorias provenientes de países terceiros caíram 6,6%, em termos homólogos. A China destaca-se como sendo o principal mercado extracomunitário de origem das importações de mercadorias (3% do total). Segue-se o Brasil (1,8%) e a Rússia (1,7%).

Quadro 3.6. Importações de Mercadorias por Grupos de Produtos e sua Distribuição por uma Seleção de Mercados

Grupos de Produtos	10^6 Euros (Cif) jan-nov		Estrutura (%) Anual		Estrutura (%) jan-nov		Taxas de variação e contributos 12 meses [1] VH [2]	12 meses [1] contrib. p.p. [3]	jan-nov VH	jan-nov contrib. p.p. [3]
	2015	2016	2010	2015	2015	2016				
TOTAL DAS IMPORTAÇÕES	**55 483**	**55 572**	**100,0**	**100,0**	**100,0**	**100,0**	**0,2**	**0,2**	**0,2**	**0,2**
Grupos de Produtos										
Agro-alimentares	8 564	8 833	14,0	15,5	15,4	15,9	3,1	0,5	3,1	0,5
Energéticos	7 413	5 379	14,4	13,2	13,4	9,7	-27,6	-3,8	-27,4	-3,7
Químicos	9 327	9 474	15,2	16,8	16,8	17,0	2,1	0,3	1,6	0,3
Madeira, cortiça e papel	1857	1925	3,6	3,3	3,3	3,5	3,5	0,1	3,7	0,1
Têxteis, Vestuário e seus acessórios	3 532	3 630	5,9	6,5	6,4	6,5	4,0	0,3	2,8	0,2
Calçado, peles e couros	1422	1484	2,0	2,5	2,6	2,7	4,6	0,1	4,3	0,1
Minérios e metais	4 691	4 486	8,7	8,4	8,5	8,1	-4,4	-0,4	-4,4	-0,4
Máquinas e aparelhos e suas partes	8 667	9 188	16,8	15,8	15,6	16,5	5,9	0,9	6,0	0,9
Material de transp. terrestre e suas partes	6 360	6 954	11,4	11,4	11,5	12,5	9,6	1,1	9,3	1,1
Aeronaves, embarcações e suas partes	390	750	2,3	0,7	0,7	1,4	89,9	0,6	92,5	0,6
Produtos acabados diversos	3 260	3 469	5,7	5,9	5,9	6,2	6,8	0,4	6,4	0,4
Total sem energéticos	48 071	50 194	85,6	86,8	86,6	90,3	4,6	4,0	4,4	3,8
Mercados de origem										
Intra UE	**42 381**	**43 340**	**78,6**	**74,8**	**76,4**	**78,0**	**2,4**	**1,8**	**2,3**	**1,7**
dos quais:										
UE-15	**40 580**	**41 376**	**76,2**	**71,8**	**73,1**	**74,5**	**2,2**	**1,6**	**2,0**	**1,4**
Espanha	18 198	18 279	32,8	32,5	32,8	32,9	1,0	0,3	0,4	0,1
Alemanha	7 169	7 540	13,2	12,3	12,9	13,6	5,3	0,7	5,2	0,7
França	4 116	4 359	8,3	7,1	7,4	7,8	5,6	0,4	5,9	0,4
Itália	2 994	3 055	5,8	5,2	5,4	5,5	2,5	0,1	2,0	0,1
Países Baixos	2 832	2 846	5,3	5,2	5,1	5,1	0,8	0,0	0,5	0,0
Reino Unido	1748	1709	3,3	3,1	3,2	3,1	-2,3	-0,1	-2,2	-0,1
Bélgica	1558	1568	2,9	2,7	2,8	2,8	1,2	0,0	0,6	0,0
Suécia	602	623	1,0	1,1	1,1	1,1	1,7	0,0	3,6	0,0
Polónia	537	669	0,6	0,9	1,0	1,2	24,2	0,2	24,6	0,2
Alargamento	**1801**	**1964**	**2,4**	**3,0**	**3,2**	**3,5**	**8,3**	**0,3**	**9,1**	**0,3**
Extra UE	**13 102**	**12 232**	**21,4**	**25,2**	**23,6**	**22,0**	**-6,9**	**-1,6**	**-6,6**	**-1,6**
dos quais:										
China	1634	1657	2,2	2,7	2,9	3,0	2,9	0,1	1,4	0,0
Angola	1027	805	0,3	2,7	1,9	1,4	-22,3	-0,4	-21,6	-0,4
EUA	890	782	1,7	1,6	1,6	1,4	-12,3	-0,2	-12,1	-0,2
Brasil	832	1020	1,7	1,5	1,5	1,8	14,9	0,2	22,6	0,3
Arábia Saudita	701	363	0,8	1,3	1,3	0,7	-52,1	-0,7	-48,1	-0,6
Rússia	569	947	1,0	1,2	1,0	1,7	57,6	0,6	66,4	0,7
Cazaquistão	525	303	0,3	1,4	0,9	0,5	-41,6	-0,4	-42,2	-0,4
Argélia	513	309	0,5	1,2	0,9	0,6	-34,0	-0,3	-39,6	-0,4
Índia	420	484	0,5	0,8	0,8	0,9	14,7	0,1	15,1	0,1
Turquia	403	483	0,6	0,7	0,7	0,9	21,4	0,2	19,7	0,1
Azerbaijão	390	391	0,0	0,8	0,7	0,7	-2,7	0,0	0,3	0,0
Coreia do Sul	313	306	0,5	0,5	0,6	0,6	0,8	0,0	-2,3	0,0
Colômbia	268	234	0,2	0,4	0,5	0,4	-17,3	-0,1	-12,7	-0,1
OPEP [4]	2 712	1867	5,8	6,8	4,9	3,4	-31,1	-1,6	-31,2	-1,5
EFTA	332	358	1,8	0,6	0,6	0,6	7,4	0,0	8,0	0,0
PALOP	1069	848	0,4	2,8	1,9	1,5	-21,5	-0,4	-20,7	-0,4

Fonte: GEE, com base nos dados das estatísticas do Comércio Internacional do INE (últimas versões disponíveis à data da publicação para o período considerado). Os dados do comércio intracomunitário incluem estimativas para as não respostas assim como para as empresas que se encontram abaixo dos limiares de assimilação.

Notas:
Importações: somatório das importações de mercadorias provenientes da UE com as importações de Países Terceiros.
Países ordenados por ordem decrescente de valor no ano de 2015.
[1] Últimos 12 meses a terminar em novembro de 2016.
[2] (dez 15-nov 16)/(dez 14-nov 15) x 100 - 100.
[3] Contributos para a taxa de crescimento das importações - análise shift-share: (TVH) x (peso no período homólogo anterior) ÷ 100.
[4] Inclui Angola.

Comércio Internacional de Bens e Serviços

De acordo com os dados divulgados para a Balança de Pagamentos para o mês de outubro de 2016, as "Exportações" (crédito) de Bens e Serviços registaram um crescimento homólogo de 0,5%. A componente dos Bens contribuiu negativamente (-0,6 p.p.) para o crescimento das "exportações" totais.

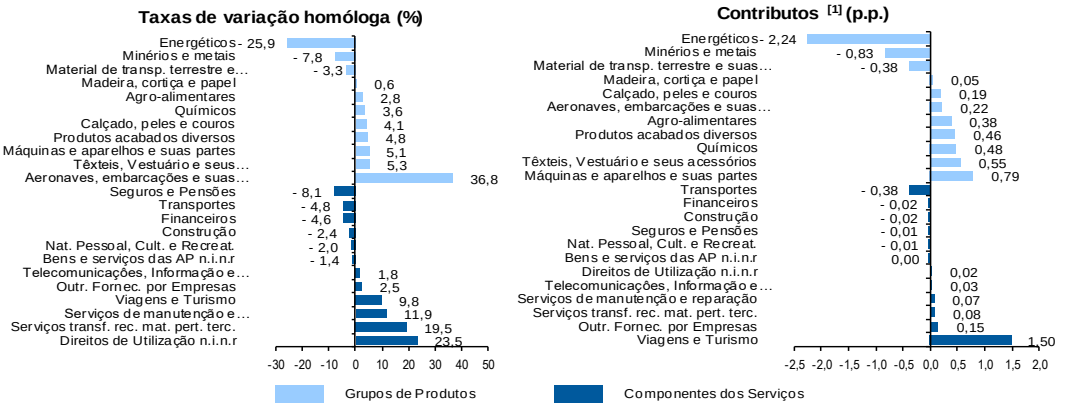
Nos primeiros dez meses de 2016, a componente dos Serviços representou 35,1% do total das "Exportações" e contribuiu positivamente (1,1 p.p.) para o seu crescimento. Do lado das "Importações" (débito) o peso desta componente foi de 18,5% no total, tendo contrariado a quebra registada nas "Importações" totais (-1,1%) com um contributo positivo de 0,1 p.p. (Quadro 3.8).

No painel esquerdo da Figura 3.4 compara-se o crescimento homólogo das diferentes categorias de Bens e de Serviços no último ano a terminar em outubro de 2016, com base em dados do INE para as "Exportações" de Bens (Grupos de Produtos) e do Banco de Portugal para as "Exportações" de Serviços. O painel direito mostra os contributos para a taxa de crescimento das "Exportações" de Bens e Serviços.

No período em análise, destacou-se o contributo positivo dos produtos "Máquinas e aparelhos e suas partes" (+0,79 p.p.) e dos "Têxteis, Vestuário e seus acessórios" (+0,55 p.p.). Na componente dos serviços, destacam-se os contributos das rubricas de Viagens e Turismo (+1,5 p.p.) e Outros Fornecimentos por Empresas (+0,15 p.p.).

Figura 3.4. Taxas de Crescimento das "Exportações" de Bens e Serviços e Contributos das Componentes

Último ano a terminar em outubro de 2017



Fonte: Cálculos do GEE com base em dados do Banco de Portugal, para as Exportações de Bens e Serviços, e do INE, para o cálculo da estrutura das exportações de Bens. A distribuição do contributo das Exportações de Bens (dados da Balança de Pagamentos, Banco de Portugal) pelos grupos de produtos segue a estrutura implícita na base de dados do Comércio Internacional de Mercadorias do INE para as Exportações de Bens (somatório das Exportações de mercadorias para a UE com as Exportações para Países Terceiros).

[1] Contributos - análise shift-share: TVH x Peso no período homólogo anterior ÷ 100. O somatório corresponde à TVH das Exportações de Bens e Serviços nos últimos 12 meses, de acordo com as estatísticas da Balança de Pagamentos do Banco de Portugal (1.1%).

Quadro 3.7. Comércio Internacional de Bens e Serviços (Componentes dos Serviços)

Valores em milhões de Euros

	jan-out		Estrutura (%) Anual		jan-out		Taxas de variação e contributos: média anual	12 meses [1] VH [2]	12 meses [1] contrib. p.p. [3]	jan-out VH	jan-out contrib. p.p. [3]
	2015	2016	2010	2015	2015	2016	10-15				
CRÉDITO (Exportações)											
Bens e Serviços	**62 774**	**63 063**	**100,0**	**100,0**	**100,0**	**100,0**	**6,6**	**1,1**	**1,1**	**0,5**	**0,5**
Bens	**41 341**	**40 941**	**68,2**	**66,0**	**65,9**	**64,9**	**5,9**	**-0,5**	**-0,3**	**-1,0**	**-0,6**
Serviços	**21 434**	**22 121**	**31,8**	**34,0**	**34,1**	**35,1**	**8,0**	**4,2**	**1,4**	**3,2**	**1,1**
Serv. transf. rec. mat. pert. terc.	266	305	0,5	0,4	0,4	0,5	4,1	19,5	0,1	14,4	0,1
Serv. de manutenção e reparação	346	377	0,7	0,6	0,6	0,6	3,5	11,9	0,1	9,0	0,0
Transportes	4 856	4 613	8,2	7,7	7,7	7,3	5,3	-4,8	-0,4	-5,0	-0,4
Viagens e Turismo	9 966	10 991	14,0	15,4	15,9	17,4	8,5	9,8	1,5	10,3	1,6
Construção	430	408	1,0	0,7	0,7	0,6	1,0	-2,4	0,0	-5,1	0,0
Seguros e Pensões	104	91	0,2	0,2	0,2	0,1	5,4	-8,1	0,0	-12,7	0,0
Financeiros	333	310	0,6	0,5	0,5	0,5	6,0	-4,6	0,0	-6,9	0,0
Direitos de Utilização n.i.n.r	66	80	0,1	0,1	0,1	0,1	18,0	23,5	0,0	20,6	0,0
Telecom., Informação e Informática	1064	1092	1,3	1,7	1,7	1,7	12,2	1,8	0,0	2,6	0,0
Outr. Fornec. por Empresas	3 710	3 571	4,5	6,2	5,9	5,7	13,5	2,5	0,1	-3,7	-0,2
Nat. Pessoal, Cult. e Recreat.	176	174	0,5	0,3	0,3	0,3	-4,9	-2,0	0,0	-0,7	0,0
Bens e serviços das AP n.i.n.r	117	110	0,3	0,2	0,2	0,2	-3,9	-1,4	0,0	-5,9	0,0
DÉBITO (Importações Fob)											
Bens e Serviços	**59 537**	**58 883**	**100,0**	**100,0**	**100,0**	**100,0**	**1,2**	**-0,6**	**-0,6**	**-1,1**	**-1,1**
Bens	**48 726**	**47 993**	**83,9**	**81,8**	**81,8**	**81,5**	**0,7**	**-1,0**	**-0,8**	**-1,5**	**-1,2**
Serviços	**10 811**	**10 890**	**16,1**	**18,2**	**18,2**	**18,5**	**3,8**	**1,4**	**0,3**	**0,7**	**0,1**
Serv. transf. rec. mat. pert. terc.	17	9	0,0	0,0	0,0	0,0	-1,0	-40,9	0,0	-44,4	0,0
Serv. de manutenção e reparação	263	260	0,3	0,5	0,4	0,4	8,3	-2,0	0,0	-1,2	0,0
Transportes	2 711	2 507	4,2	4,5	4,6	4,3	2,7	-6,8	-0,3	-7,5	-0,3
Viagens e Turismo	3 036	3 228	4,4	5,1	5,1	5,5	4,1	6,6	0,3	6,3	0,3
Construção	74	92	0,1	0,1	0,1	0,2	0,2	27,4	0,0	25,0	0,0
Seguros e Pensões	287	283	0,4	0,5	0,5	0,5	5,1	-0,4	0,0	-1,3	0,0
Financeiros	496	419	1,2	0,8	0,8	0,7	-5,5	-11,6	-0,1	-15,5	-0,1
Direitos de Utilização n.i.n.r	511	597	0,7	0,9	0,9	1,0	6,9	20,2	0,2	16,8	0,1
Telecom., Informação e Informática	939	931	1,2	1,6	1,6	1,6	7,5	-2,2	0,0	-0,8	0,0
Outr. Fornec. por Empresas	2 179	2 235	2,7	3,7	3,7	3,8	7,7	3,7	0,1	2,5	0,1
Nat. Pessoal, Cult. e Recreat.	207	219	0,7	0,3	0,3	0,4	-11,9	6,9	0,0	6,1	0,0
Bens e serviços das AP n.i.n.r	92	109	0,1	0,1	0,2	0,2	2,7	16,0	0,0	19,0	0,0

Fonte: GEE, com base nos dados das estatísticas da Balança de Pagamentos do Banco de Portugal.

Notas:

Valores Fob para a Importação de bens.

[1] 12 meses até outubro de 2016.

[2] Contributos para a taxa de crescimento - Análise shift-share : (TVH) x (peso no período homólogo anterior) ÷ 100. Medem a proporção de crescimento das Exportações/Importações atribuível a cada categoria especificada.

Artigos

Em Análise

The short-term impact of structural reforms on productivity growth: beyond direct effects

Sílvia Santos, Ana Fontoura Gouveia e Inês Gonçalves*

Abstract

In recent years, literature has linked structural reforms with productivity growth. Considering Portugal's recent comprehensive reform agenda, this topic acquires particular relevance. Using data for Portuguese firms for the period 2006-2014, this paper assesses the impact of structural reforms on firm's productivity in the short-run. In line with existing literature, the analysis reveals that some reforms produce positive effects already in the short-run. There are, however, important differences across reform areas and firms, namely when comparing those at the technological frontier and the others. In particular, frontier firms are better equipped to materialize the gains of improved framework conditions and to deal with competitive pressures, grasping more often short-term gains. In any case, gains for those at the frontier are also beneficial for laggards via spillover effects, as both diffusion and catching-up mechanisms are, in general, positive for Portuguese firms. Finally, our analysis shows that, in the short-run, these spillovers may be potentiated or curbed by reforms, which therefore impact the economy also through indirect effects. Indeed, while pass-through is, in most cases, hampered by reforms, the effects on catching-up mechanisms are mixed; they improve with some reforms but are deteriorated with others.

1. Introduction

To address the structural bottlenecks that acted as a drag on growth, Portugal implemented in the recent years important reforms, aimed at fostering productivity and promoting sustained economic growth. Indeed, reform indicators produced by the OECD, the World Bank and the World Economic Forum show progress for Portugal almost in all reform areas (Table 1[1]).

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[1] Annex 1 provides details on each of these indicators and Section 4 explains the criteria for their selection.

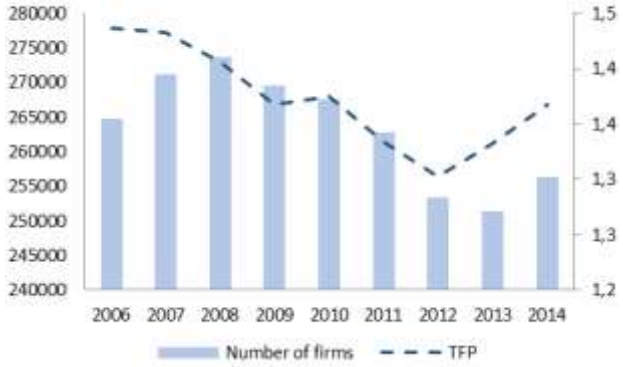
Table 1: Reform indicators

Indicator	Source	2010	2015	Change 2015-2010
Institutions (1-7; 7 best)	WCI	4,4	4,4	⇨
Infrastructure (1-7; 7 best)	WCI	5,3	5,5	⇧
Health and primary education (1-7; 7 best)	WCI	6,1	6,3	⇧
Higher education and training (1-7; 7 best)	WCI	4,8	5,2	⇧
Goods market (1-7; 7 best)	WCI	4,3	4,6	⇧
Labor market (1-7; 7 best)	WCI	3,9	4,3	⇧
Financial market (1-7; 7 best)	WCI	4,3	3,4	⇩
Technological readiness (1-7; 7 best)	WCI	4,6	5,5	⇧
Business sophistication (1-7; 7 best)	WCI	4,2	4,3	⇧
Innovation (1-7; 7 best)	WCI	3,8	4,0	⇧
Starting a Business (N Procedures)	DB	6	5	⇧
Paying Taxes (Total tax rate)	DB	42,6	40,9	⇧
Resolving Insolvency (Recovery rate)	DB	72,6	73,4	⇧
Network sectors (0-6; 0 best)	OECD	2,4	2,2	⇧

Source: WCI – World Competitiveness Index of the World Competitiveness Forum; DB – Doing Business of the World Bank; OECD – OECD PMR indicators; Note: Data for the Network sectors refers to 2013, the latest year available.

It is thus important to understand if these reforms translated into higher productivity growth. Looking at the evolution of Total Factor Productivity (TFP)[2] in Portugal, there is indeed an improvement in recent years (Figure 1).

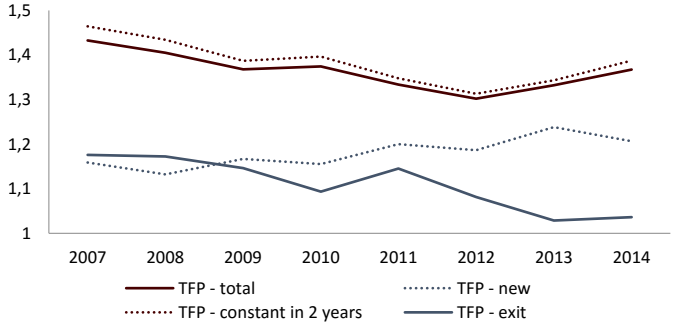
Figure 1: TFP (RHS) and number of firms (LHS)



Source: Authors' own calculations based on firm-level data (see section 4 for details).

This recovery is not only driven by the incumbents, but also by the exit of firms which have lower productivity levels when compared with the ones that enter the market (Figure 2), which is exactly the goal of a better structural environment. The aim of this paper is thus to assess the link between the structural reforms implemented in recent years and productivity developments.

Figure 2 - TFP by status of firm: incumbents, new and exit firms



Source: Authors' own calculations based on firm-level data (see section 4 for details).

By using firm level data for the period 2006-2014, we conclude that for some reform areas the positive impact on productivity growth is visible already in the short-run. This is particularly true for firms at the technological frontier (i.e. those with higher productivity in the relevant industry), which are better equipped to grasp short-term gains. It should be noted that, in general, these positive effects on frontier firms are channelled to other firms via spillover mechanisms (both diffusion and catching-up), which are positive for

[2] Section 3 explains how this indicator was computed.

Portuguese firms. Finally, we show that beyond their direct effect, reforms impact the economy via indirect effects, potentiating or curbing the spillover mechanisms. In general, in the short-run reforms tend to curb diffusion, while the effects we find on catching-up are mixed.

The remainder of the paper is organized as follows. Section 2 presents the literature review, Section 3 the methodology, and Section 4 the data. The results are presented in Section 5, followed by an application, in Section 6, to the reforms enacted during the period 2010-2013 in Portugal. Finally, Section 7 concludes and discusses avenues for further work.

2. Literature review

This section focuses on the empirical relation between structural reforms and productivity growth, which is the focus of our paper.[3]

Both cross country and national studies, using either firm-level, sectoral-level or aggregate panel data, show that the impact of reforms is, in general, positive in the long-run and growing over time (see for instance Bouis and Duval, 2011; Égert and Gal, 2016a; Arnold and Barbosa, 2015; Barnes, Bouis, Briard, Dougherty and Eris, 2013; Bouis, Causa, Demmou, Duval and Zdzienicka, 2012; IMF, 2015 and 2016; and OECD, 2015). There are, however, some exceptions. In particular, the evidence on the effects of labor market reforms, namely those affecting employment protection legislation (EPL), is inconclusive (see OECD, 2007 for a review of the literature).

Although the long-run effects of reforms are reasonably well established, the short-run run effects have recently attracted attention, given their relevance for the political economy of the reform process and for the design of the different measures (e.g. the use of grandfathering rules or compensation mechanisms).

Indeed, reforms operate in a context of existing frictions in labor and product markets and entail, in some cases, grandfathering or transitory rules that may impact short-run aggregate supply and demand in ways that differ from their long-run effects. For instance, while competitive pressures may increase productivity already in the short-run, (costly) innovation activities take time to produce effects and may depress short-term aggregate supply. Investment in education also entails short-term costs, while benefits can only be seen in the longer-run. Depending on the financing of this measure, the short-run effects may also be quite different.[4] In addition, while a better allocation of resources improves the overall efficiency of the economy, in the short-run the main effects of a reduction of mark-ups may be determined by the exit of incumbents and thereby by (human and physical) capital scrapping, contracting aggregate supply. The effect of the entrance of new firms (and new hires) may only materialize over the medium-run and therefore unemployment may induce aggregate demand to contract. In addition, while reforms may boost confidence and generate expectation of increased income and wealth, increasing, via the permanent income hypothesis, consumption and investment already in the short-run, they may also have the opposite effect – the uncertainty over the future may increase precautionary savings, decreasing demand. Some of these effects are potentiated during economic downturns: the entrance of new firms is further delayed and agents' uncertainty is higher.

In this context, the short-run effect of reforms is an important empirical question. Bouis, Causa, Demmou, Duval and Zdzienicka (2012), using a long time-series of aggregate data for a sample of OECD countries, show that while some reforms produce gains already in the short-run, some labor and product market reforms may have short-term recessionary effects, a result confirmed by Cacciatore and Fiori (2015).

Some authors have further explored the reasons for these short-term effects, taking into account the impact of the cycle, of the initial conditions and of technological differences.

[3] For theoretical models or for applications using DSGE, please see for instance Blanchard and Giavazzi (2003) , Cacciatore, Duval and Fiori (2012), Lusinyan and Muir (2013), Anderson, Barkbu, Lusinyan and Muir (2014), Andrés, Arce and Thomas (2014), ECB (2015) and Aguiar, Ribeiro e Gil (2017) .

[4] In general, the fiscal impact of the measures, including their financing (e.g. via debt or increased revenues / decreased expenses) also has important short-run effects.

i) The effect of the cycle

IMF (2016), relying on aggregate, sectoral and firm-level data for a sample of advanced economies, show that the short-run effects of reforms are curbed by macroeconomic conditions. In the same vein, OECD (2016), using industry level data for a group of OECD countries, argues that the short-term costs of reforms lowering barriers to entry and the cost of dismissal are larger under downswings. Dabla-Norris, Guo, Haksar, Kim, Kochhar, Wiseman and Zdzienicka (2015), relying on industry-level data, argue that the short-term impact of reforms may be negative depending on the type of reform and the sector considered but also on the position over the cycle; in this context, reforms affecting product markets, the labor market and infrastructures may have negative effects in the short-run. Adhikari, Duval, Hu and Loungani (2016), based on aggregate data for a cross-country panel, also show that weak macroeconomic conditions hamper the benefits of reforms.

ii) Initial conditions

Gal and Hijzen (2016), using firm level data for 18 advanced economies, show that product market reforms in general bring benefits for the reformed sectors and downstream industries already in the short-run. However, by further exploring the effects on the reformed sectors, they show that results are only visible in the case of larger reforms and are more positive the lower the pre-existing restrictions, arguing that higher initial regulation may bring higher costs (but also higher longer term benefits). In the case of downstream industries, the authors show that the gains for manufactures are higher than those for services, possibly because the former display higher competitive pressures and thus have higher incentives to materialise the potential benefits from lower priced intermediate inputs. Égert (2016), Égert and Gal (2016b) and Bouis, Causa, Demmou, Duval and Zdzienicka (2012), relying on aggregate data, show that different reforms interact with each other and their effects depend on initial institutional settings.

iii) Productivity differentials and technological spillovers

Saia, Andrews and Albrizio (2015) argue that a country's productivity growth is influenced by the distance to the productivity frontier (the catching-up effect) and the ability to learn from the frontier (the pass-through or diffusion effect). For economies further away from the technological frontier, the catching-up effect is the most significant as it implies adopting existing technologies. As an economy gets closer to the technological frontier, spillovers from the frontier are the main effect, as innovation becomes more relevant than imitation. By relying on sectoral-level data, the authors show that technological spillovers are improved by a supportive institutional setting, namely by lower barriers to entry, efficient judicial systems and bankruptcy laws and university-industry R&D partnerships.

Following the theoretical contributions of Acemoglu, Aghion and Zilibotti (2006) and Aghion and Howitt (2006), Bourlès, Cette, Lopez, Mairesse and Nicoletti (2010) argue that productivity growth depends positively on the growth of the technological frontier and the technological gap to frontier countries and that these mechanisms may be affected by reforms (as restrictions to competition may affect productivity by impacting the incentives of firms to adopt existing technologies and to innovate). In line with the theoretical models, the authors argue that a boost in competition may increase the returns from innovation for frontier firms ("escape-competition effect") but reduce the incentives for laggards to innovate ("Schumpeterian effect"). By using a panel of OECD industry-level data, Bourlès, Cette, Lopez, Mairesse and Nicoletti (2010) show that the lack of competition curbs productivity more strongly for observations closer to frontier.

Nicoletti and Scarpeta (2003), using industry level for a panel of OECD countries, argue that the negative effect of product market regulation on productivity works mainly by slowing down technological catch-up. The authors show that the positive gains of entry liberalisation are higher the further the country is from the technological leader. Dabla-Norris, Guo, Haksar, Kim, Kochhar, Wiseman and Zdzienicka (2015), relying on industry-level data for a sample of advanced economies, show that there are important spillovers at play, both by a process of catching-up by laggards and by pass-through effects from the frontier to the others. Dabla-Norris, Ho and Kyobe (2013), using a panel of industry-level data for more than 100 advanced, emerging market and developing economies, show that the short-term effect of reforms varies with the distance to the world sectoral technological frontier.

Building on this literature, and using firm-level data for Portugal, we explore the direct link between structural reforms and productivity over the short-run, by reform area. The choice of short-run effects is motivated by data availability but also by the relevance of this time horizon for the political economy of reforms. In addition, and departing from the notion of spillover effects across countries, we assess spillover effects within firms in the same country. In particular, we assess catching-up and pass-through effects from firms at the technological frontier to those lagging behind. In particular, we assess whether structural reforms amplify these spillover effects.

3. Method

The framework considered in this paper follows the work on the short-run effect of reforms and their interaction with technological spillovers, as reviewed in the previous section, but applying it to developments within a country. Our technological frontier is therefore defined at firm level, within each sector (and not at country level).

Using firm-level data, we depart from the estimation of the following model:

$$\Delta Y_{i,s,t} = \beta_0 + \beta_1 \Delta YFrontier_{s,t} + \beta_2 DTF_{i,s,t-1} + \beta_3 REF_{t-1} + \mu_t + v_s + \varepsilon_{i,t} \quad (1)$$

where ΔY is the annual productivity growth rate for firm i, in sector s and year t. $\Delta YFrontier$ represents the average productivity growth of frontier firms within the sector of firm i at time t, DTF is the productivity gap between laggards and frontier firms in the beginning of the period, REF is the reform indicator lagged one period, entered separately in each regression (to avoid correlation between the regressors). Time and industry fixed effects are also included (μ_t and v_s). In this context, β_3 gives us the effect of the reform while β_1 and β_2, if positive, translate pass-through and catching-up effects.

One may wonder if reforms affect differently frontier and laggard firms. Indeed, it can be argued that the potential gains of some reforms are larger for laggards or that frontier firms are better equipped to grasp the benefits of reforms. To assess this, we disentangle the reform effect for laggards and frontier firms, as follows:

$$\Delta Y_{i,s,t} = \beta_0 + \beta_1 \Delta YFrontiers_{,t} + \beta_2 DTF_{i,s,t-1} + \beta_3 REF_{t-1} + \beta_4 Dfront_{i,s} * REF_{t-1} + \beta_5 Dfront_{i,s} + \mu_t + v_s + \varepsilon_{i,t} \quad (2)$$

where Dfront is a dummy which takes the value 1 if the firm belongs to the sectoral frontier and 0 otherwise. Therefore, $\beta_3 + \beta_4$ provide an estimate of the effect of the reforms on frontier firms whereas β_3 provides estimates for the impact on laggards.

However, as discussed in the previous section, structural reforms may also impact the mechanisms of pass-through and catching-up. To analyse this inderect effects of reforms, we interact the reform variable with the productivity growth of frontier firms and with the distance to frontier, as follows:

$$\Delta Y_{i,s,t} = \beta_0 + \beta_1 \Delta YFrontier_{s,t} + \beta_2 DTF_{i,s,t-1} + \beta_3 REF_{t-1} + \beta_4 Dfront_{i,s} * REF_{t-1} + \beta_5 Dfront_{i,s} + \beta_6 \Delta YFrontier_{s,t} * REF_{t-1} + \beta_7 DTF_{i,s,t-1} * REF_{t-1} + \mu_t + v_s + \varepsilon_{i,t} \quad (3)$$

β_6 and β_7 represent, respectively, the change of pass-through and catching-up effects driven by the reform.

4. Data

The analysis is based on annual, firm-level data for Portuguese companies obtained from *Informação Empresarial Simplificada* (IES) for the period 2006-2014.[5] Our main database is the Sistema de Contas Integradas das Empresas (SCIE) from the Statistics Portugal (INE), where the information from IES is compiled and subject to quality checks.

Our initial dataset, covering nine years of data, includes 3,232,481 firm-level observations.[6] In order to increase the robustness of the results, a number of adjustments are done to the dataset. In particular, firms with negative or nil values of output, intermediate inputs and number of employees are excluded

[5] IES is the system by which all enterprises in Portugal meet their obligation to report their annual accounts simultaneously to the Ministries of Finance and Justice, Banco de Portugal and Statistics Portugal. Data are available from 2004 onwards but as most reforms indicators are available only from 2006, we only considered the period from 2006 onwards.

[6] The database also includes sole proprietorships, which were excluded from our analysis. The figure presented already excludes them.

(13% of the observations). In addition, financial and insurance activities, health and social services, artistic and sport activities, international organizations and families that employ domestic service are also excluded, given their specificities (6% of the observations).Finally, to ensure comparability, nominal values are adjusted for inflation.

The technological frontier is computed at the firm level for each sector and period and taking into account firms in the 90th percentile of productivity. The measure of firm-level productivity is total factor productivity (TFP), computed following the methodology developed by Levinsohn and Petrin (2003)[7,8]. As not all firms have all the needed input variables available, the final number of observations is smaller than our initial dataset.[9] The distance to frontier (DTF) is computed by sector and period as the difference between the lower bound of the productivity at the frontier and the firm's productivity (for all laggard firms).

Table 2 presents the descriptive statistics for the observations considered in our regressions, for the period 2006-2014. The firms from our dataset have an average of 10 workers and 1.6 million euro in assets. Their annual revenues reach, on average, 1.2 million euros. The annual TFP growth is, on average, negative (-0.02%) while the technological frontier displays a nil annual growth, reflecting also the financial and economic crisis that affected Portugal during the period considered.

Looking at the differences between frontier and laggard firms, we conclude that the former are larger in terms of output, assets or number of workers. By definition, frontier firms are also more productive, with an average productivity growth over the period of 0.23%, which compares to -0.05% for the laggards.[10]

Table 2: Descriptive statistics for firm level data (2006-2014)

Variable	*Unit*	Mean	Mean frontier	Mean laggards	Std Dev	Min	Max
Output	*10^3 euro*	1213	5580	728	27200	0	10300000
Operating costs	*10^3 euro*	286	616	250	5712	0	1820000
Cost of employees	*10^3 euro*	173	280	161	2093	0	469000
Assets	*10^3 euro*	1604	3304	1415	55000	0	21200000
TFP growth [D.lnTFP]	*%*	-0,02	0,23	-0,05	0,55	-10,76	12,20
TFP growth of frontier [D.lnFront]	*%*	0,00	-	-	0,02	-0,47	0,51
Distance to frontier [DTF]	*p.p.*	1,33	0,00	1,01	0,81	0,00	14,74
Number of workers	*unit*	10	15	9	92	1	22734

Source: Authors' own calculations based on SCIE.

The measures of reforms are taken from three datasets: the OECD Product Market Reforms database[11]; the World Economic Forum Global Competitiveness Index[12]; and the World Bank Doing Business Indicators[13]. Our criteria for the selection of reform indicators are (i) the availability of annual data for at least 8 years; (ii) variability across years; (iii) indicators that reflect structural reforms with a potential overall impact in the economy. The indicators selected include the following: Institutions, Infrastructure, Health and Primary Education, Higher education and training, Goods market, Labor market, Financial market, Technological readiness, Business sophistication, Innovation, Starting a business, Paying taxes, Resolving insolvency and Network sectors. As most of reform indicators are only available from 2006, this is the starting period of our analysis (Annex 1 provides a description of the indicators and Annex 2 presents the time series used in the regressions).

[7] The authors develop a method that addresses the endogeneity problem arising from methods such as OLS or fixed-effects estimators. As the authors argue, when estimating production functions, one must account for the correlation between input levels and productivity as otherwise one gets inconsistent estimates of the parameters of the production function. Therefore, Levinsohn and Petrin (2003) develop an estimator using intermediate inputs to proxy for the unobservable productivity term. The implementation of this methodology in STATA was done by Petrin, Poi and Levinsohn (2004).

[8] For robustness, we have also computed our regressions for labor productivity (ratio of output to employment) and the results are broadly unchanged. However, as the classification of a firm as belonging to the sectoral frontier depends upon the measure of productivity used (TFP or LP), the outcome for frontier firms (a group which is, by construction, smaller than the one of the laggards) differs for some reform areas.

[9] The actual number of observations is indicated in the regression outputs presented in the annex.

[10] The average productivity growth for frontier firms (0.23%) differs from the average of annual growth at the frontier (0.00%), as we are working with an unbalanced sample (where the number of firms is not constant across years).

[11] OECD (2013).

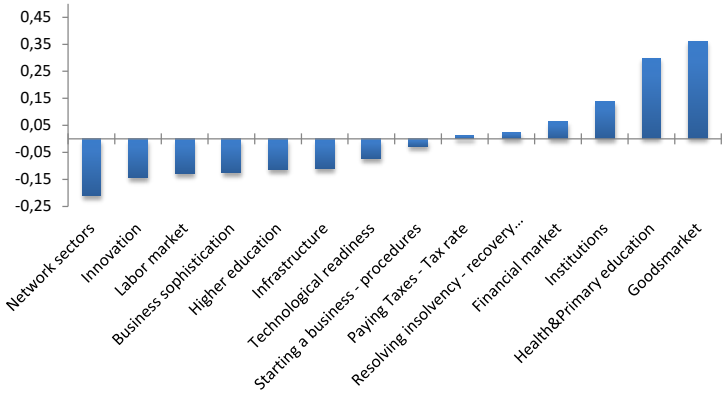
[12] http://reports.weforum.org/global-competitiveness-report-2015-2016.

[13] http://www.doingbusiness.org.

5. Results

By estimating equation 1[14], we find, in line with existing literature, that the short-term impact of reforms is not uniform across reform areas (see Figure 3; detailed regression output available in Annex 3). Indeed, some reforms do have positive effects, already in the short-run. This is the case of reforms affecting the goods market, health and primary education, institutions, financial markets, insolvency procedures (recovery rate) and taxation.

Figure 3: Coefficients of the direct short-term impact of reforms - regression (1)



Source: Authors' own computations. All coefficients are significant at 5%.

However, other reforms fail to deliver benefits in the short-run, consistently with the literature focusing on the short-term costs of reforms. This is the case of labor market reforms, higher education and R&D (technological readiness, innovation and business sophistication), as these are areas where benefits need time to materialize, while costs are already visible in the short-run. Infrastructure reforms also present a negative impact, which may be related with decreasing returns to scale, with returns failing to compensate for the associated investment costs. The easiness of starting a business and the liberalization in the network sectors also display negative short-term effects on productivity growth, as the potential effects of increased competitiveness pressures are only visible in the medium term.

In all cases, we do find evidence of positive spillover effects, meaning that laggards are catching-up with frontier firms and that growth at the frontier is beneficial to all firms, via diffusion mechanisms.

To better understand the impact of reforms, and given that frontier and laggard firms may benefit differently from reforms (either because the potential gains are larger for laggards or because frontier firms are better equipped to grasp the benefits of reforms), we refine equation (1) to allow for differentiated effects. Equation (2) allows capturing the direct impact of reforms on firms at the frontier ($\beta_3 + \beta_{4)}$ and on laggards (β_3).

Focusing on the effects of reforms in this new setting, we see that, for the set of reform indicators which have a negative short-term impact on productivity growth under equation (1), there are four reform areas where benefits are actually positive for frontier firms (see Table 3; detailed regression output in Annex 4).

Again, positive spillover effects from frontier firms are always present and are driven both by pass-through and catching-up effects. This raises an important point: even when the impact of the reform is negative for laggards, there are second round effects on those firms (due to spillovers) from the positive impact of reforms on frontier firms.

Equation (2) captures the direct effect of reforms and second round effects from spillovers. However, it does not capture the indirect effects related with reforms impacting the strength of these spillover mechanisms.

By estimating these indirect effects of reforms under equation (3), we show that, in general, diffusion mechanisms are curbed by reforms, at least in the short-run. For catching-up, the results are more mixed, with some reforms allowing for increased benefits for firms further away from the frontier and others being more beneficial for firms closer to the frontier (see Annex 5).

[14] For presentational purposes, all reform indicators were adjusted so that a higher value means more flexibility or less barriers.

Adding these amplification effects to the direct effect of the reform, we are able to assess the overall effect of the reforms. In fact, under regression (3), the overall (direct and indirect) impact of a reform is driven by[15]:

$$\text{Reform Impact}_{i,s,t} = \beta_3 + \beta_4 \text{Dfront}_{i,t} + \beta_6 \Delta\text{YFrontier}_{s,t} + \beta_7 \text{DTF}_{i,s,t-1.} \quad (4)$$

Note that for firms at the frontier, equation (4) simplifies to:

$$\text{Reform Impact}_{i,s,t} = \beta_3 + \beta_4 + \beta_6 \Delta\text{YFrontier}_{s,t} \quad (5)$$

Whereas, for laggards, it becomes:

$$\text{Reform Impact}_{i,s,t} = \beta_3 + \beta_6 \Delta\text{YFrontier}_{s,t} + \beta_7 \text{DTF}_{i,s,t-1.} \quad (6)$$

Given that this overall effect depends both on the productivity growth at the frontier and on the distance to frontier (DTF), we illustrate the results by fixing one of these variables. Given that DTF is firm specific, we opted to provide an illustration considering productivity growth of frontier firms of 1%. This allows us to solve, in the case of laggards, for the threshold DTF, i.e. the DTF below/above which the laggards firms have an overall positive impact of the reform. Knowing the threshold DTF, we are also able to compute the share of enterprises that benefit from each reform.

Table 3: Coefficients of the direct short-term impact of the reform, broken down by type of firm: laggards and frontier firms – regression (2)

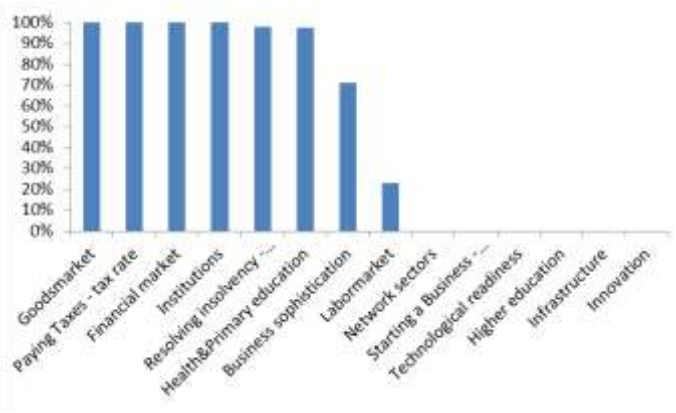
Reform areas	Laggards firms	Frontier firms
Network sectors	-0,221	-0,001
Innovation	-0,183	0,081
Labormarket	-0,164	-0,391
Business sophistication	-0,160	-0,465
Higher education	-0,146	-0,024
Infrastructure	-0,139	0,015
Technological readiness	-0,077	0,010
Starting a Business - procedures	-0,029	0,001
Paying Taxes - tax rate	0,015	0,067
Resolving insolvency - recovery rate	0,023	0,020
Financial market	0,066	0,001
Institutions	0,147	-0,006
Health&Primary education	0,289	0,227
Goodsmarket	0,370	0,082

Source: Authors' own computations. All coefficients are significant at 5%.

Therefore, looking at laggard firms, we confirm the results of regression (2) concerning the direct positive effects of the mentioned reforms (goods market, taxation, financial market, institutions, insolvencies and health and primary education). Even accounting for indirect effects, we show that, for those six areas, all or nearly all laggard firms are positively impacted with the reform (see Figure 4). Finally, for two of the reforms with negative direct effects (business sophistication and labor market), the positive indirect effects allow for overall positive benefits, although this only affects a fraction of firms (71% and 23%, respectively).

[15] Note that this expression accounts for the effects of the reform, either direct or indirect (via the impact of reforms on spillover effects). Second round effects are not incorporated in this expression but may also be derived from equation (3).

Figure 4: Illustration: percentage of laggard firms with a positive effect of reforms (direct and indirect) when sectoral frontier grows at 1% (2014) – regression (3)



Source: Authors' own computations.

Turning now to frontier firms, and with the example of 1% productivity growth at the frontier, we are interested in the sign of expression (5): if positive, then the impact of the reform is positive in the short-run.

Therefore, when controlling for indirect effects on spillover mechanisms, we do not confirm the positive direct effects visible in equation (2) for infrastructure, innovation and financial market (Table 4). Moreover, the direct effect of network reform turns positive (it was negative under regression (2)).

It is interesting to note that, under the conditions of this simulation, the evidence on indirect short-term effects is mixed, both for frontier and laggard firms. In a number of reform areas, spillovers (diffusion and catching-up) are being amplified by reforms, but in some others there is no amplification mechanism or it is even negative.

Therefore, we may conclude that, even in the short term (and considering a hypothetical scenario where productivity growth at the frontier is 1%), seven of the reform areas under analysis have an overall positive impact on frontier firms. In addition, seven reform areas produce positive short-run effects on all or at least a majority of laggards. This should be seen as a lower bound as there are also second round effects from the positive spillovers from frontier firms. These means that if a reform benefits frontier firms, the positive spillovers may more than compensate the negative effects of reforms on laggards.

Table 4: Illustration: Overall effect of reforms on frontier firms when sectoral frontier grows at 1% (2014) – regression (3)

	Overall effect	Direct effect	Indirect effect
Goods market	+	+	-
Paying Taxes - tax rate	+	+	+
Resolving insolvency - recovery rate	+	+	-
Health&Primary education	+	+	-
Network sectors	+	+	none
Starting a Business - procedures	+	+	+
Technological readiness	+	+	+
Financial market	-	-	-
Institutions	-	-	-
Business sophistication	-	-	-
Labormarket	-	-	-
Higher education	-	-	none
Infrastructure	-	-	+
Innovation	-	-	none

Source: Authors' own computations. Note: "+" stands for a positive effect whereas "–" represents a negative impact.

6. An application for reforms between 2010 and 2013

In order to better understand the actual impact of reforms on productivity growth, we estimate the change in TFP driven by reforms that occurred during the period 2010-2013. The starting year was chosen to capture the reforms implemented after the adjustment programme; the end date is due to firm-level data availability (which is available up to 2014; reforms enter the equation with a lag). We thus compute, at firm level, the change in the growth rate of productivity between 2012 and 2014 driven by the reforms enacted

between 2010 and 2013. The exercise focuses on the reform areas that improved on efficiency grounds between 2010 and 2013, as presented in Table 5.

Table 5 – Reform areas which improved between 2010 and 2013

Reform area	2010	2013
Infrastructure (1-7; 7 best)	5,30	5,55
Health and primary education (1-7; 7 best)	6,13	6,28
Higher education and training (1-7; 7 best)	4,76	5,15
Technological readiness (1-7; 7 best)	4,63	5,24
Innovation (1-7; 7 best)	3,77	3,93
Starting a Business (N Procedures)	6	5
Paying Taxes (Total tax rate)	42,6	42,3
Network sectors (0-6; 0 best)	2,37	2,18

Source: World Competitiveness Index except Starting a business and Paying taxes (Doing Business – World Bank) and Network sectors (OECD – PMR).

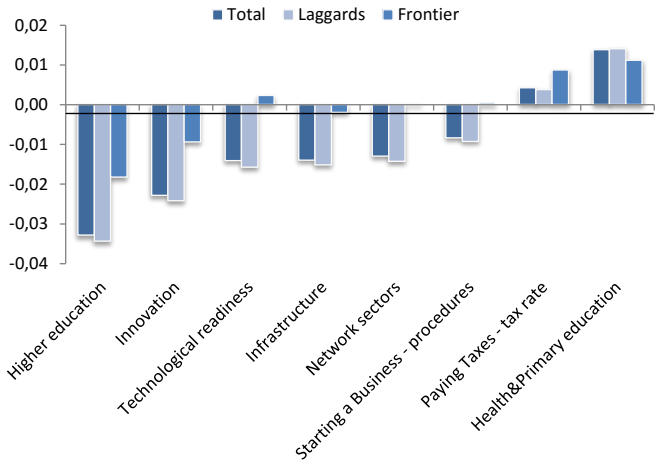
By computing the change in productivity growth driven by reforms for each firm and each year, we conclude that the reforms undertaken between 2010 and 2013 improving health and primary education and decreasing the corporate tax rate increased the average annual TFP growth at firm level by 0.014 and 0.004 percentage points, respectively (Figure 5). The effect of the tax rate is stronger for frontier firms as compared to laggards.

Reforms affecting network sectors, the technological readiness and the cost of starting a business, although entailing short-term costs for laggards, have positive (but small) positive effect on frontier firms.

The other reforms fail to bring short-term gains. This is particularly true for reforms affecting higher education, infrastructure and innovation. Still, frontier firms loose much less than the others.

These negative effects may be linked with different factors, as presented in detail in Section 2. In particular, our results are in line with the literature highlighting the short-term costs of implementing reforms during downturns, precisely the case during the period under consideration. In addition, most of the reforms were implemented broadly simultaneously, in a large reform wave, without carefully incorporating the sequencing considerations that derive from the interactions among reforms and the impact of initial institutional settings, as discussed in Section 2.

Figure 5 – Short-term impact of reforms on the average change of annual firm-level productivity growth between 2012 and 2014 (percentage points) – all firms, laggards and frontier firms



Source: Authors' own computations. Note: The black line represents the average change in the annual growth of firms' individual productivity.

7. Conclusions and way forward

In recent years, Portugal undertook a broad-based reform agenda, spanning across different reform areas. Reform indicators produced by different international institutions and fora, such as the OECD, the World Bank and the World Competitiveness Forum, reflect these improvements.

Understanding the impact of the reforms undertook is crucial both for policy makers – as it allows them to fine-tune reform efforts and to better design future reforms – and for ownership of reforms by the different stakeholders. Looking at the short-term impact of reforms is particularly relevant for the political economy of the process and for devising appropriate compensatory, complementary or transitory measures, where needed.

In this paper, we rely on firm-level data for Portugal from 2006 to 2014 and assess the impact of structural reforms on firm's productivity in the short-run. We show that, for some reform areas, benefits are already seen in the short-run. In addition, frontier firms are better equipped to grasp short-term gains, meaning that while some reforms do have detrimental short-term effects for laggards, they produce gains for firms at the frontier. This may be linked with the *"escape competition"* and *"Schumpeterian effect"* described in Bourlès, Cette, Lopez, Mairesse and Nicoletti (2010), whereby reforms potentiate innovation for the most productive firms but reduce the incentives to do so for the least productive (as they won't be able to survive in a more competitive environment). In any case, improvements at the frontier are beneficial also for (surviving) laggards, via spillover effects. Indeed, diffusion and catching-up mechanisms are positive for Portuguese firms, meaning that gains at the frontier are translated into gains to all firms. Finally, we show that, in the short run and at firm-level, these spillovers may be potentiated or curbed by reforms (in line with industry-level results in the available literature). While diffusion mechanisms are being curbed by the reforms, at least in the short run, existing catching-up effects are either being potentiated or mitigated, depending on the reform area.

With the results of our econometric analysis, we also assess the short-run effects of the reforms implemented in Portugal between 2010 and 2013. We show that reforms in two areas are already translating into higher firm-level productivity growth; but there are also short-term costs. In line with the existing empirical literature, this may be linked with the effect of the cycle, as downturns are detrimental for the reform process. In addition, a better framed sequencing and bundling of reforms could also, as argued by the literature, mitigate these costs given the relevance of initial conditions and of complementary policies. While some authors defend that, even in the presence of short-term costs, reforms should be frontloaded, to grasp the reform momentum (European Commission, 2016), others consider that a strong commitment of implementing reforms in the future (e.g. by passing today legislation that is enacted in three years from now) may be a good compromise in terms of the political process and achieve, for some reform areas, better efficiency results (IMF 2016). While the current dataset does not allow us to further exploit the effects of the cycle, given the reduced available time-span, it allows for a more detailed analysis of the effects of the initial conditions and on the cross-effects of reforms. This is the focus of our subsequent research.

It should be noted that growth depends on both labor utilisation and labor productivity. The first is affected by both employment and participation while the second by capital deepening and total factor productivity (TFP). We focus on TFP, given its relevance for growth, but a full picture of the impact of reforms can only be grasped if all these dimensions are taken into account. Equity considerations should also be taken into account as reforms may have redistributional implications that need to be accounted for. To date, there are very few studies focusing on this last dimension, given the limits of available toolkits and datasets. Going forward, we aim at enlarging our research to provide a more encompassing picture.

In addition, the results are at firm-level, thus allowing us to gain important insights on the impact of reforms on the productivity growth of the average firm. In particular, we are able to distinguish between the effects on the most productive and the others (frontier firms and laggards). However, as different firms have different weights in the economy (and our regressions are unweighted), our results cannot be used as a measure of the aggregate effects on the economy. This would be possible with the use of aggregate data (or of weighted regressions).

Finally, and while an analysis of short-term effects is crucial for policy makers and the society at large, the long-term impact of reforms should also be carefully monitored. However, for the time being, the short time span of our firm level database (nine years) is an important limitation.

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Annex 1 – Description of reform indicators

World competitiveness index indicators	
Institutions	Determined by the legal and administrative framework within which individuals, firms, and governments interact to generate wealth. Considers management of public finances, private-sector transparency, property rights among others.
Infrastructure	Considers modes of transport, electricity supplies and a solid and extensive telecommunications network to measure the extension and efficiency of a country's infrastructure.
Health and primary education	Takes into account the quantity and quality of the basic education received by the population, in addition to the investment in the provision of health services.
Higher education and training	Measures secondary and tertiary enrollment rates as well as the quality of education as evaluated by business leaders. The extent of staff training is also taken into consideration.
Goods market	Considers healthy market competition, both domestic and foreign and demand conditions such as customer orientation and buyer sophistication.
Labor market	Takes into account the flexibility to shift workers from one economic activity to another rapidly and at low cost, and to allow for wage fluctuations without much social disruption as well as the incentives for employees and the promotion of meritocracy at the workplace. Considers also the equity in the business environment between women and men.
Financial market	Measures the sophistication of financial markets: sound banking sector, well-regulated securities exchanges, venture capital, and other financial products, as well as, the trustworthiness and transparency of the banking sector.
Technological readiness	Measures the agility with which an economy adopts existing technologies to enhance the productivity of its industries, with specific emphasis on its capacity to fully leverage information and communication technologies (ICTs) in daily activities and production processes for increased efficiency and enabling innovation for competitiveness.
Business sophistication	Concerns two elements that are intricately linked: the quality of a country's overall business networks and the quality of individual firms' operations and strategies.
Innovation	Considers the environment that is conducive to innovative activity and supported by both the public and the private sectors. In particular, it means sufficient investment in (R&D), especially by the private sector; the presence of high-quality scientific research institutions; extensive collaboration in research and technological developments between universities and industry; and the protection of intellectual property.
Doing Business indicators	
Starting a business	This topic measures the paid-in minimum capital requirement, number of procedures, time and cost for a small- to medium-sized limited liability company to start up and formally operate in economy's largest business city. In this paper the indicator considered covers the number of procedures.
Paying taxes	This topic records the taxes and mandatory contributions that a medium-size company must pay or withhold in a given year, as well as measures the administrative burden in paying taxes and contributions. In this paper the indicator considered is the tax rate.
Resolving insolvency	This topic identifies weaknesses in existing insolvency law and the main procedural and administrative bottlenecks in the insolvency process. The indicator considered in our analysis is the recovery rate.
OECD Product Market Reforms indicator	
Network sectors	Summarizes regulatory provisions in seven sectors: telecoms, electricity, gas, post, rail, air passenger transport, and road.

Annex 2 – Reform indicators – 2006-2014

Reform variables	Source	2006	2007	2008	2009	2010	2011	2012	2013	2014
Institutions (1-7; 7 best)	WCI	4,91	4,87	4,75	4,49	4,37	4,20	4,28	4,32	4,43
Infrastructure (1-7; 7 best)	WCI	4,83	4,98	5,07	5,23	5,30	5,48	5,50	5,55	5,66
Health and primary education (1-7; 7 best)	WCI	6,56	6,04	6,00	5,95	6,13	6,12	6,19	6,28	6,39
Higher education and training (1-7; 7 best)	WCI	4,62	4,62	4,59	4,58	4,76	4,82	4,98	5,15	5,37
Goods market (1-7; 7 best)	WCI	4,49	4,59	4,53	4,39	4,32	4,27	4,31	4,26	4,58
Labor market (1-7; 7 best)	WCI	4,12	4,14	4,18	4,04	3,85	3,79	3,80	3,79	4,09
Financial market (1-7; 7 best)	WCI	4,80	4,94	4,71	4,26	4,26	3,98	3,71	3,50	3,65
Technological readiness (1-7; 7 best)	WCI	4,09	4,28	4,51	4,73	4,63	5,31	5,27	5,24	5,42
Business sophistication (1-7; 7 best)	WCI	4,23	4,37	4,39	4,28	4,19	4,19	4,17	4,18	4,29
Innovation (1-7; 7 best)	WCI	3,70	3,71	3,66	3,69	3,77	3,77	3,86	3,93	4,08
Starting a Business (N Procedures)	DB	8,00	7,00	6,00	6,00	6,00	6,00	6,00	5,00	5,00
Paying Taxes (Total tax rate)	DB	43,80	42,90	42,50	42,30	42,60	42,60	41,90	42,30	42,30
Resolving Insolvency (Recovery rate)	DB	75,00	74,00	69,40	69,40	72,60	70,90	74,60	71,60	72,20
Network sectors (0-6; 0 best)	OECD	2,57	2,55	2,55	2,55	2,37	2,31	2,31	2,18	-

Annex 3 – Regression output – equation (1) – dependent variable: firm-level TFP growth

Regression (1)

	Total factor productivity growth													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Institutions	Infrastructure	Health&Prim education	Goods market	Labor market	Higher education	Financial market	Technological readiness	Business sophistication	Innovation	Starting a business - procedures	Paying Taxes - Tax rate	Resolving insolvency - recovery rate	Network sectors
D.lnFront	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***	0,898***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
L.DTF	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***	0,545***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
L.Reform variable	0,140***	-0,11***	0,299***	0,362***	-0,129***	-0,115***	0,064***	-0,072***	-0,126***	-0,144***	0,027***	-0,012***	0,024***	0,211***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
country effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
industry effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-squared														
within	0,366	0,366	0,366	0,366	0,366	0,366	0,366	0,366	0,366	0,366	0,366	0,366	0,366	0,366
between	0,079	0,079	0,079	0,079	0,079	0,079	0,079	0,079	0,079	0,079	0,079	0,079	0,079	0,079
overall	0,112	0,112	0,112	0,112	0,112	0,112	0,112	0,112	0,112	0,112	0,112	0,112	0,112	0,112
Number of observations	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224

Annex 4 – Regression output – equation (2) – dependent variable: firm-level TFP growth

Regression (2)

Total factor productivity growth														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Institutions	Infrastructure	Health&Prim education	Goods market	Labor market	Higher education	Financial market	Technological readiness	Business sophistication	Innovation	Starting a business - procedures	Paying Taxes - Tax rate	Resolving insolvency - recovery rate	Network sectors
D.lnFront	1,090***	1,091***	1,095***	1,091***	1,088***	1,092***	1,093***	1,093***	1,090***	1,092***	1,094***	1,095***	1,095***	1,090***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
L.DTF	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***	0,604***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
L.Reform	0,147***	-0,139***	0,289***	0,370***	-0,164***	-0,146***	0,066***	-0,077***	-0,16***	-0,183***	0,029***	-0,015***	0,023***	0,221***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
D.Frontier	1,439***	-0,061***	1,128***	2,016***	1,647***	0,161***	1,026***	0,333***	2,039***	-0,246***	0,934***	2,955***	0,966***	1,278***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
D.Frontier*L.Reform	-0,153***	0,154***	-0,062***	-0,289***	-0,227***	0,123***	-0,065***	0,087***	-0,304***	0,264***	-0,030***	-0,052***	-0,003***	-0,219***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
country effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
industry effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-squared														
within	0,417	0,417	0,416	0,417	0,417	0,417	0,417	0,417	0,417	0,417	0,417	0,417	0,416	0,417
between	0,149	0,149	0,150	0,150	0,149	0,150	0,150	0,149	0,150	0,150	0,149	0,149	0,150	0,150
overall	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188
Number of observations	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224

Annex 5 – Regression output – equation (3) – dependent variable: firm-level TFP growth

Regression (3)

Total factor productivity growth														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Institutions	Infrastructure	Health & Prim education	Goods market	Labor market	Higher education	Financial market	Technological readiness	Business sophistication	Innovation	Starting a business - procedures	Paying Taxes - Tax rate	Resolving insolvency - recovery rate	Network sectors
D.lnFront	5,856***	-2,705***	6,574***	9,489***	4,106***	1,299	2,262***	-1,037***	6,778***	2,015	2,358***	18,393***	11,766***	2,095***
P>|z|	[0,000]	[0.008]	[0,000]	[0,000]	[0,000]	[0,110]	[0,000]	[0,049]	[0,000]	[0,175]	[0,000]	[0,000]	[0,000]	[0,001]
L.DTF	0,438***	0,822***	1,489***	0,035	0,106***	1,187***	0,48***	0,712***	-0,601***	1,592***	0,621***	1,249***	1,352***	0,217***
P>|z|	[0,000]	[0,000]	[0,000]	[0.477]	[0,001]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
L.Reform	0,116***	-0,142***	0,419***	0,253***	-0,168***	-0,15***	0,039***	-0,057***	-0,16***	-0,187***	0,032***	-0,015***	0,033***	0,068***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
Dummy_Front	1,309***	0,113***	1,851***	1,565***	1,253***	0,642***	0,926***	0,42***	1,072***	0,569***	0,949***	3,479***	1,584***	0,966***
P>|z|	[0,000]	[0.002]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]
Dummy_Front*L.Reform	-0,124***	0,121***	-0,18***	-0,186***	-0,127***	0,022**	-0,042***	0,069***	-0,077***	0,047***	-0,032***	-0,064***	-0,012***	-0,09***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,014]	[0,000]	[0,000]	[0,000]	[0,018]	[0,000]	[0,000]	[0,000]	[0,000]
D.lnFront*L.Reform	-1,057***	0,724***	-0,901***	-1,911***	-0,748***	-0,038	-0,274***	0,449***	-1,326***	-0,238***	-0,213***	-0,407***	-0,15***	-0,396
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,001]	[0,828]	[0,001]	[0,000]	[0,002]	[0,000]	[0,001]	[0,001]	[0,000]	[0,105]
L.DTF*L.Reform	0,037***	-0,042***	-0,144***	0,13***	0,126***	-0,122***	0,029***	-0,023***	0,284***	-0,263***	-0,003*	-0,015***	-0,01***	0,16***
P>|z|	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,000]	[0,076]	[0,000]	[0,000]	[0,000]
country effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
industry effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-squared														
within	0,418	0,418	0,417	0,418	0,418	0,418	0,418	0,418	0,418	0,418	0,417	0,417	0,417	0,418
between	0,149	0,149	0,147	0,149	0,149	0,148	0,149	0,149	0,149	0,148	0,149	0,149	0,150	0,148
overall	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,188	0,187	0,188	0,188
Number of observations	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224	1900224

Short-run effects of product markets' deregulation: a more productive, more efficient and more resilient economy?

Gustavo Monteiro, Ana Fontoura Gouveia e Sílvia Santos *

Abstract

This paper assesses the short-term impact of product market deregulation in upstream sectors on the productivity growth of firms in downstream sectors (i.e. those firms using the output of the reformed sectors as inputs in their production process). Relying on a firm level database for the period 2004-2014 covering all Portuguese firms, we show that the most productive firms - those at the sectoral technological frontier - grasp short-run benefits from these reforms, which are then spread to the other existing firms via spillover mechanisms. In addition, reforms potentiate the exit of the least productive firms, improving the resource allocation in the economy. Finally, we show that the adoption of product market reforms in upstream sectors leads to a more resilient economy, better equipped to face adverse shocks.

1. Introduction

In recent years, Portugal implemented a large number of structural policies aimed at increasing productivity and improving resilience to shocks. Reforms covered many areas, such as the labour market, education and skills, the judicial and fiscal systems and several product market frameworks.

Product market reforms were a key area, given the dimension of the pre-existing challenges and the expected payoffs.[1] In 2008, Portugal ranked 26th out of 34th countries in the OECD Product Market Regulation index.[2] In this context, the product market reform agenda covered a large number of measures, aimed at fostering competition and reducing the excessive rents of sheltered sectors (see Box 1 for an overview of the main measures). As a consequence, between 2008 and 2013, Portugal climbed 14 places in the OECD's Product Market Regulation ranking, reaching the 12th position.

Box 1 – Examples of the main product market reforms implemented in Portugal during the economic adjustment programme (2011-2013)

Liberalization of gas and electricity markets, with the phasing out of regulated tariffs;

Negotiations with energy producers to reduce rents and eliminate the tariff debt;

Creation of a transports regulator; the reduction of ports operating costs;

New telecommunications regulatory framework, including the reduction of termination rates and lower restrictions on customers' mobility;

Competition enhancing framework in the postal sector;

Several steps in the direction of the liberalisation of 19 regulated professions;

Revision of the competition law and improved enforcement (e.g. with the creation of specialized courts);

Elimination of State special rights in private companies.

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[1] Several studies show that product market reforms produce the largest economic gains when compared to other reforms (see, for instance Égert and Gal, 2016 and Barnes, Bouis, Briard, Dougherty and Eris, 2013).

[2] The country ranked 1st being the more flexible in terms of product market regulations. The index is a *de jure* measure, thus not assessing outcomes.

By using firm-level data from 2004 to 2014 and the OECD's PMR indicators, we assess the impact of the liberalization of product markets in Portugal on firms' productivity, reallocation of resources and resilience to shocks. In particular, we consider the effect of deregulation of product market sectors in downstream industries, i.e. on firms using these markets' output as input in their production process. This is possible due to a newly available OECD dataset relying on input-output matrices (Égert and Wanner, 2016).

Given that the reforms are recent and our available firm-level time series are relatively short, we focus mainly on short-run effects. This is particularly relevant for the political economy of the reform process, as its potential short-term costs, if not well communicated and properly addressed, may undermine support and create reform fatigue. In fact, while long-term gains of product market reforms are well established (see e.g. IMF, 2015 and OECD, 2015), they may take some years to materialize and even be negative in the short-run. For instance, lower rents lead to the exit of incumbent firms (while firm entry occurs only in the medium-term), thus contracting aggregate supply and increasing unemployment, which in turn reduces aggregate demand. In addition, innovating firms have immediate costs but only longer-term (uncertain) gains. Aggregate demand may also contract in the short-run if reforms increase agents' uncertainty, leading them to higher savings and less consumption.

We provide the following contributions. Firstly, we analyse the short-term impact of reforms on productivity, showing that deregulation in upstream sectors increases productivity growth for the most productive downstream firms (those at the technological frontier), but not for the others (the laggards). However, laggard firms benefit from second round effects, as we also show that there are spillovers from those at the frontier, both via diffusion and catching-up mechanisms. In addition, we show that the short-run effects of reforms are heterogeneous across sectors, possibly due to different competitiveness structures and the position over the cycle.[3]

Secondly, we assess how the reforms affect firms' exit. Using a probit model, we show that less productive firms are more prone to exiting the market under a more flexible regulatory setting, which highlights the relevance of reforms to promote a more efficient resource allocation.

Finally, we assess the effects of reforms on firms' resilience to shocks. Relying on a difference-in-differences estimation and comparing two groups of firms – one more affected by the reforms and the other not as much – we show that previously enacted reforms allow firms to better manage the 2011 crisis, with a lower reduction in productivity.

This empirical contribution, by highlighting the existence of short-run costs allows for fine-tuning existing reforms and improving the design of future reforms; moreover, the evidence on the benefits of already enacted reforms is key in promoting ownership. This is particularly important in product markets, where vested interests are in general a strong impediment to reforms (as costs are concentrated on a small number of stakeholders, while gains are diffuse).

The paper proceeds as follows: Section 2 explores the most relevant literature and Section 3 presents the methodology. Section 4 introduces the database and the variables used and Section 5 provides the empirical results. Finally, Section 6 concludes.

2. Literature Review

The long-run positive impact of product market reforms on productivity and growth is a well-established result, both in model-based simulations (e.g. Arpaia, Alfonso, Roeger, Varga and Veld, 2007; Everaert and Schule, 2008; Andrés, Arce and Thomas, 2014; IMF, 2016) and in applied econometric research, using aggregate, sectoral and firm-level data (e.g. Égert and Gal, 2016; Arnold and Barbosa, 2015; Barnes, Bouis, Briard, Dougherty and Eris, 2013; Bouis and Duval, 2011; Bouis, Causa, Demmou, Duval and Zdzienicka, 2012; IMF, 2015; and OECD, 2015).[4]

However, these longer-run effects take time to materialize and may even be negative in the short-run – for instance, lower mark-ups may force incumbents to leave the market, implying, in the short-run, physical

[3] For instance, the impact on hotels and restaurants is overall positive, which may be due to the competitive pressures that were introduced in the sector. Higher output-price elasticity implies that price reductions translate into higher output. Conversely, in the construction sector the effects are overall negative, since, as described in the literature, short-term costs of reforms are amplified during downturns (that particularly affected the construction sector).

[4] See Table A in the Annex for a schematic view of the papers covered in this literature review.

and human capital scrapping, contracting aggregate supply; the increased unemployment due to the exit of the least productive firms increases unemployment, potentiating also a reduction in short-term aggregate demand; agents' possible perception of increased income insecurity may increase precautionary savings, further reducing aggregate demand.

The results in the model-based literature indeed point to the presence of these short-term costs for small open economies (Cacciatore, Duval, Fiori and Ghironi, 2015), for economies at the zero lower bound (Eggertsson, Ferrero and Raffo, 2013) and during downturns (IMF, 2016). The evidence on applied econometric literature does indicate that short-term gains are not granted. For instance, while Cacciatore and Fiore (2015) and Bouis, Causa, Demmou, Duval and Zdzienicka (2012), using aggregate data for a set of OECD countries, find evidence of short-term costs, Gal and Hijzen (2016), using firm-level data for 18 advanced economies, and Barone and Cingano (2011), using industry-level data for a set of OECD countries, find that product market reforms produce gains already in the short-run. Firm-level national studies, such as Forlani (2012) for France and Lanau and Topalova (2016) for Italy, also provide evidence of short-term gains.

It is thus important to understand what is driving these short-run effects, as different contexts may lead to different results. The empirical literature points to effects such as the role of (i) the economic cycle, (ii) technological spillovers, (iii) sectoral differences and (iv) initial conditions and interactions with other reforms. Indeed, a number of papers, using aggregate (e.g. Adhikari, Duval, Hu and Loungami, 2016), sectoral (e.g. Dabla-Norris, Guo, Haksar, Kim, Kochhar, Wiseman and Zdzienicka, 2015) and firm-level data (IMF, 2016), argue that the macroeconomic conditions influence the impact of structural reforms, with downturns reducing the expected gains. Bourles, Cette, Lopez, Mairesse and Nicolleti (2013), using industry-level data for a set of OECD countries, show that the effects of product market reforms are different for different firms, as increased competition may increase the returns to innovation for the most productive firms but reduce the incentives to innovate for the least productive. Nicoletti and Scarpeta (2003), also relying on sectoral level data, argue that product market regulation slows down technological catching-up. Santos, Gouveia and Gonçalves (2017), using firm level data for Portuguese firms for the period 2006-2014, show that while the effects of product market reforms are positive in the short-run for frontier firms (and, for some product market reforms, also for laggards), they negatively impact spillovers, in particular by curbing the pass-through from technological frontier firms to laggards. Dabla-Norris, Guo, Haksar, Kim, Kochhar, Wiseman and Zdzienicka (2015) and Gal and Hijzen (2016), using, respectively sectoral and firm-level data, show that the impact of product market reforms differs across sectors, due to different levels of competition and regulation before the implementation of such reforms. By comparing the effect of upstream regulation on manufacturers and services, Gal and Hijzen (2016) show that, while the effect is positive for both, it is more visible for manufacturers, which is, in general, more competitive (and thus have more to gain in terms of increase output from potential price reductions made possible for lower priced inputs). By further exploring the direct effects on the reformed sectors, the authors argue that higher initial regulation may bring higher short-term costs (but also larger long-term gains). Finally, Égert and Gal (2016) and Bouis, Causa, Demmou, Duval and Zdzienicka (2012), using aggregate data, also show that short-term costs are not independent of the initial conditions nor of other reforms.[5]

In a nutshell, the existing empirical literature shows that liberalized product markets foster productivity growth in the long-run but their short-run effects depend on the conditions under which they occur. Overall, gains are grasped due to a more competitive environment, which decreases mark-ups and increases churn-rates. The first effect was already studied for the Portuguese economy (Amador and Soares, 2013 and Folque, 2017), showing the important role of reforms, while highlighting the significant sectoral differences. For churn rates, existing literature shows that product market reforms potentiate firm entry and exit (European Commission, 2005; Schiantarelli, 2005; and Lanau and Topalova, 2016, Gal and Hijzen, 2016).

[5] The studies presented above evaluate the impact of product market reforms from two angles: their direct effect on regulated sectors (which are usually upstream sectors, such as electricity or gas) and their effects on the economy at large, by their impact on downstream sectors (which use the output of upstream sectors as inputs in the production process). For instance, while Gal and Hijzen (2016) and Lanau and Topalova (2016) focus mainly on upstream effects, Barone and Cingano (2011), Forlani (2012) and Bourles, Cette, Lopez, Mairesse and Nicolleti (2013) study the impact of reforms on downstream industries. The latter are based on sectoral or firm-level intensities of upstream inputs usages.

The reduction in mark-ups and the increased churn rates improve the allocation of resources within the economy, fostering productivity growth. Indeed, the link between a more efficient resource allocation and higher productivity is widely explored in the literature.[6]

In addition to higher productivity growth, product market reforms are also expected to improve the economy's shock resilience, a result corroborated by Duval, Elmeskov and Vogel (2007), using industry-level data for a cross-country panel of OECD countries. Ernst, Gong and Semmler (2007), relying on a similar dataset, also conclude that these reforms reduce consumption volatility in the economy. Pelkmans, Montoya and Maravalle (2008), using sectoral data for euro area countries, show that product market reforms lubricate shock adjustments, price stickiness and inflation persistence. Finally, Cacciatori and Fiori (2016), relying on firm-level data for euro area countries, prove that business cycle fluctuations and economic volatility decreases with the implementation of product market reforms.

Following this literature, we investigate the impact of the deregulation of upstream sectors which occurred in Portugal in recent years. In particular, we assess the short-run effects on downstream firms' productivity, taking special attention to sectoral differences and to different initial productivity levels. Additionally, we assess if reforms are fostering a more efficient reallocation of resources, by potentiating the exit of the least productive firms. Finally, we investigate if reforms improve the resilience to adverse shocks.

3. Methodology

This section outlines the methodology of each part of the paper.

Firstly, we investigate the relationship between product market regulation in upstream sectors and firms' performance in downstream ones. Our baseline equation is as follows:

$$\Delta \mathrm{TFP}_{\mathrm{i,k,t}} = \beta_0 + \beta_1 \Delta \mathrm{Frontier}_{\mathrm{k,t}} + \beta_2\, \mathrm{DTF}_{\mathrm{i,k,t-1}} + +\beta_3\, \mathrm{Regimpact}_{\mathrm{k,t-1}} + \sum_{s=1}^{4} \psi_{\mathrm{i}} \mathrm{D}_{\mathrm{i}} + \alpha_{\mathrm{k}} + \alpha_{\mathrm{t}} + \alpha_{\mathrm{r}} + \varepsilon_{\mathrm{i,k,t}} \quad [2]$$

Where $\Delta TFP_{i,k,t}$ is the growth of total factor productivity for firm i in sector k at year t.[7] $\Delta Frontier_{k,t}$ stands for the productivity growth of the sectoral technological frontier within the sector k at time t and $DTF_{i,k,t-1}$ denotes the distance of each firm to its sectoral frontier; these terms are included to control for spillovers from firms at the frontier, i.e., to assess whether more productive firms are spreading innovative features across the economy through so-called diffusion (or pass-through) mechanisms and catching-up. $Regimpact_{k,t-1}$, our regulatory variable, is an index that ranges from 0 (low impact of regulation in downstream sectors) to 1 (high impact).[8] Hence, we expect a negative coefficient for this variable. Additionally, sectoral, time and region fixed effects are included (α_k , α_t , α_r, respectively) to control for characteristics that are specific to the sector, year and region. Firm size controls are also included ($\sum_{s=1}^{4} \psi_i D_i$). All regressions use robust standard errors to control for heteroskedasticity.

To assess the potential heterogeneous effects across firm productivity levels and sectors, we extend [2] by interacting the reform variable with a dummy, $Dfront$ (which is one for firms at the sectoral technological frontier and 0 otherwise), and separately for each sector (with and without the interaction variable).

The impact on productivity may be driven by changes in the intensive margin (i.e. changes in the TFP of firms in the market) or in the extensive margin (i.e. exit of firms with lower TFP). We investigate this second mechanism through the probit equation [3]:

$$\mathrm{Exit}_{\mathrm{i,k,t}} = \beta_0 + \beta_1 \mathrm{Regimpact}_{k,t-1} * \mathrm{TFP}_{\mathrm{i,k,t-1}} + \beta_2 \mathrm{Regimpact}_{\mathrm{k,t-1}} + \beta_3 TFP_{i,k,t-1} + \varepsilon_{i,k,t} \quad [3]$$

Where $Exit_{i,k,t}$ is equal to 1 when a firm exits the market and 0 otherwise, $TFP_{i,k,t-1}$ stands for the level of productivity and $Regimpact_{i,k,t-1}$ is defined as in [2]. If reforms potentiate the exit of low productivity firms, the coefficient of the interaction term should be negative. The coefficient of $Regimpact_{i,k,t-1}$ is also expected to be negative, as a higher value represents a higher impact of regulation in upstream sectors. $TFP_{i,k,t-1}$ should also have a negative coefficient, because more productive firms are more likely to survive. We cluster standard errors at the sector level.

[6] For instance, Foster, Haltiwanger, and Krizan (2001) and Restuccia and Rogerson (2007), both using firm-level data for the United States, conclude that a better resource allocation leads to productivity improvements.
[7] For more detailed information on how this variable is constructed, please refer to Section 4.2.
[8] The index may increase because the downstream sector relies more heavily on regulated upstream sectors or because upstream regulation is tightened.

Finally, we apply a difference in differences (*DiD*) approach to evaluate whether firms in the downstream sectors that benefit the most from reforms (*treated* group) are more resilient to crisis. We expect their productivity levels to be less affected by the 2011 crisis, as compared to the *control* group (firms which are less affected by reforms).

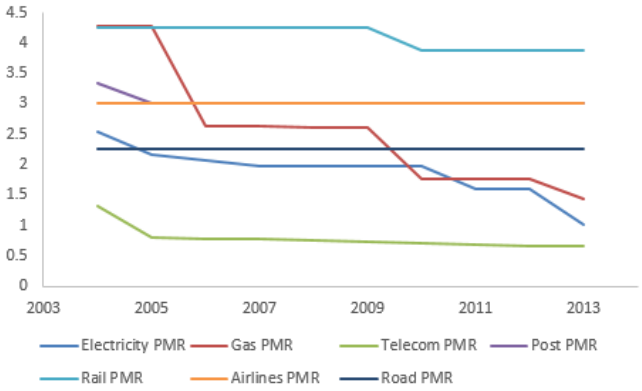
Given that, up to 2011, the most important reforms tackled electricity and gas (Figure 1), we focus on these two upstream sectors to create the *treated* and *control* groups. The treated sectors use electricity and gas more intensively, i.e. belong to the 70th sectoral percentile, while the control sectors use them less intensely (30th sectoral percentile of gas and electricity usage).[9] To build the sectoral intensities, we use the OECD input-output matrix for the Portuguese economy. Importantly, we define the *treated* and *control* at the sectoral level, but we then implement a firm-level analysis.[10]

We thus estimate the following equation:

$$\mathrm{TFP}_{i,k,t} = \alpha_0 + \alpha_1 \mathrm{T}_k + \alpha_2 \mathrm{S}_t + \alpha_3 \mathrm{T}_k * \mathrm{S}_t + \varepsilon_{i,k,t} \quad [3]$$

The dependent variable is the level of total factor productivity; T_k is the treatment dummy, i.e., it indicates firms in *treated* sectors; S_t is a time dummy that turns one from 2011 onwards, while $T_k * S_t$ is the *DiD* term, that we expect to have a positive coefficient, implying that the *treated* group reacts better to a negative shock, registering a lower decrease in TFP as compared to the *control* group.

Figure 1 – Product market regulation in network industries in Portugal



Source: OECD, Product Market Regulation Database. These indicators vary between 0 and 6 with 6 standing for maximum regulation.

4. Data

4.1 The dataset

We use the IES database - *Informação Empresarial Simplificada* (Simplified Corporate Information) provided by INE - *Instituto Nacional de Estatística* (Statistics Portugal), which includes the annual accounts (income statements and balance sheet) of all Portuguese firms, as reported simultaneously to the Ministry of Finance, the Ministry of Justice, Bank of Portugal and Statistics Portugal. Data are available from 2004 onwards.

The initial dataset covered 3,916,315 observations for the period 2004-2014.[11] To ensure consistency and robustness of our results, we focus on firms with positive values of assets, turnover, external supplies and services and with non-negative personnel expenses and number of employees. In addition, using the 3-digit level NACE Rev. 3, we exclude specific sectors, namely financial activities and insurance services, health care, entertainment, domestic staff and international organizations, given the specificities of their business models. With these exclusions, we reach a dataset of 3,199,118 observations. Moreover, due to

[9] *Treated* group sectors (70th percentile): Electricity, gas and water supply; Other non-metallic mineral products; Mining and quarrying; Basic metals; Hotels and Restaurants; Agriculture, hunting, forestry and fishing; Pulp, paper, paper products, printing and publishing and Rubber and plastics products; *control* group sectors (30th percentile): Post and telecommunications; Electrical machinery and apparatus, nec; R&D and other business activities; Construction; Motor vehicles, trailers and semi-trailers; Computer, Electronic and optical equipment; Renting of machinery and equipment and Coke, refined petroleum products and nuclear fuel.

[10] Ideally, one would prefer to use firm-level intensities, but this information is not available in our firm-level database.

[11] We focus solely on companies and we have thus excluded individual entrepreneurs (*empresários em nome individual*).

lack of underlying data, we are not able to compute total factor productivity (TFP) for around 300,000 firms, leaving us with a total of 2,892,449 firms.[12]

4.2 Variables

This section describes the variables used in the study. The main performance variable is TFP, although we also compute Labour Productivity (LP) (output per worker), for robustness checks. TFP was computed using the Levinsohn and Petrin (2003) estimation method, which addresses the endogeneity problem arising from methods such as OLS or fixed-effects estimators.[13] The technological frontier was defined as the firms in the 90th percentile for the estimated TFP, by year and sector. Firms outside the technological frontier are labelled as laggards. The distance to frontier is the productivity gap between laggards and frontier firms, and is computed for each laggard firm as the difference between its TFP level and the lower bound value of the productivity at the frontier, for each year and sector.

Sectoral fixed effects are constructed using the 3-digit level NACE Rev 3.[14] Region fixed effects are obtained with the NUT 2 Portuguese region division.[15] Additionally, firm size controls are included. Following Statistics Portugal methodology, we construct each firm-size bracket according to the conditions presented in Table 1.

Table 2 presents the descriptive statistics. The firms in our sample have an average of 10 workers, 1.2 million € of output and 1.6 million € of assets. Concerning firm size, 82% are micro firms, 15% are small, 2% are medium and 0.4% are large. Operational costs and cost of employees account for, on average, 0.3 and 0.2 million €, respectively. Frontier firms are, on average, larger – they have a much higher output, their assets are more than the double of those of laggards and their number of workers is also higher. The average annual TFP growth is negative for laggards (-0.05%) but positive for firms at the frontier (+0.24%).[16]

Table 1 – Firm size - criteria

Type of Firm	Number of Workers		Output
Micro	<10	and	<2 Million
Small	>10 and <50	and	>2 Million and <10 Million
Medium	>50 and <250	and	>10 Million and <50 Million
Large	>250	or	>50 Million

Source: Statistics Portugal

[12] Please refer to Section 4.2. for detailed information about our estimation of total factor productivity (TFP).
[13] As the authors argue, when estimating production functions, one must account for the correlation between input levels and productivity, as otherwise one gets inconsistent estimates of the parameters of the production function. Therefore, they develop an estimator using intermediate inputs to proxy for the unobservable productivity term. To compute the TFP, we rely on the STATA code developed by Petrin, Poi and Levinsohn (2004), using external supplies and services as a proxy for intermediate inputs.
[14] The included sectors are Agriculture, hunting, forestry and fishing; Mining and quarrying; Food products, beverages and tobacco; Wood and products of wood and cork; Pulp, paper, paper products, printing and publishing; Coke, refined petroleum products and nuclear fuel; Chemicals and chemical products; Rubber and plastics products; Other non-metallic mineral products; Textiles, textile products, leather and footwear; Basic Metals; Fabricated metal products except machinery and equipment; Machinery and equipment n.e.c; Motor vehicles, trailers and semi-trailers; Other transport equipment; Electricity, gas and water supply; Construction; Transport and storage; Post and telecommunications; Real estate activities; Office, accounting and computing machinery; Electrical machinery and apparatus n.e.c; Radio, television and communication equipment; Medical, precision and optical instruments; Manufacturing n.e.c and recycling; Wholesale and retail trade, repairs; Hotels & Restaurants; Renting of machinery and equipment; Computer and related activities; Other Business Activities; Research and Development.
[15] This division includes 7 regions, covering Mainland Portugal and Islands.
[16] The average growth of the technological frontier is different from this value (0.00%) because we have an unbalanced sample.

Table 2 – Descriptive Statistics – firm level data

Variables	Unit	Mean	Std Dev	Min.	Max.	Mean frontier	Mean laggards
Output	10^3 €	1,218	26,700	0	10,300,000	5,214	774
Operational Costs	10^3 €	288	5,621	0	1,820,000	735	238
Cost of employees	10^3 €	174	2,114	0	3,030,00	282	152
Assets	10^3 €	1,586	53,500	0	21,200,000	3,051	1,423
Number of workers	unit	10	89	1	22,734	13	9
Micro Firms	unit	0.82	0.38	0	1	0.72	0.83
Small Firms	unit	0.15	0.36	0	1	0.2	0.14
Medium Firms	unit	0.02	0.15	0	1	0.06	0.02
Large Firms	unit	0	0.07	0	1	0.01	0
TFP growth [ΔTFP]	%	-0.02	0.54	-10.8	12.2	0.24	-0.03
TFP growth of frontier [ΔFrontier]	%	0	0.02	-0.6	0.53	-	-
Distance to Frontier [DTF]	p.p.	0.86	0.75	0	13.45	0	0.96

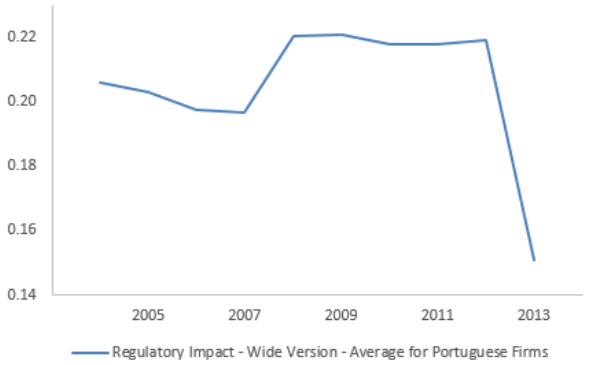
Source: Authors' own calculations based on IES.

The Regulatory Impact variable (*Regimpact*) is an OECD index of the potential costs of the anti-competitive regulation in network sectors, retail distribution and professional services on 37 sectors of the economy that uses the output of these sectors as intermediate inputs (see Égert and Wanner, 2016, for more information). This variable is computed by the OECD by weighing the degree of regulation in the non-manufacturing sectors (Regnmi) by the input-output coefficient (w) of sector k from the non-manufacturing sector j:

$$Regimpact_{k,t} = \sum_{j=1}^{n} Regnmi_{j,t} * w_{j,k} \qquad [1]$$

We rely on the wide version of the indicator, which includes network sectors, retail distribution and professional services as upstream sectors, and use the narrow version, which only considers regulation in network sectors, for robustness purposes.[17] Figure 2 shows the evolution of the wide indicator for Portuguese firms between 2004 and 2013.[18]

Figure 2 – Regulatory Impact indicator 2004–2013



Source: Authors' own computations based on OECD, Product Market Regulation Database and IES.

Table 3 – Descriptive statistics –firm level data - DiD estimation

Variable	Unit	Treated	Control	t[a]
Output	10^3 €	1,120	1,289	-2.48
		(28)	(70)	
Operational Costs	10^3 €	164	434	-32.81
		(3)	(10)	
Cost of Employees	10^3 €	118	195	-21.18
		(2)	(4)	
Assets	10^3 €	1,622	1,762	-1.13
		(81)	(48)	
lnTFP	unit	2	1	200
		(0)	(0)	
Number of workers	unit	8	11	-16.09
		(0.11)	(0.14)	

Source: Authors' own calculations based on IES.
a Test of equality of means in treated and control groups.

[17] For a discussion on the *pros* and *cons* of each type of indicator, see Égert and Wanner (2016).
[18] Appendix A6 presents detailed information on the *wide* and *narrow* indicator for each sector and year.

The *treated* and *control* sectors used in the *DiD* estimation have, by construction, very different intensities of electricity and gas input usage: between 4% and 54% of total inputs for the *treated* and from 0% to 1% for the *control*.[19] In addition to these difference, Table 3 shows that firms in *treated* sectors are more productive but are also smaller, both in terms of number of employees and output. Operational costs and the cost of employees are higher in the *control* group.

5. Empirical Results and Robustness Checks

5.1 Impact on Productivity

We start by estimating equation [2] to analyse the effects of upstream regulation on firm productivity. The results, presented in Table 4, indicate the presence of short-run costs, as reforms are curbing productivity one year after their implementation. To assess the validity of our results, we conduct several robustness tests. In particular, we replace our regulatory impact indicator with its narrow version. As argued by Égert and Wanner (2016), while the wide indicator is more suitable for cross-country or cross-sector studies, the narrow indicator is better suited for time-series analysis (as only the network indicator has an annual frequency). Furthermore, we test the regression with Labour Productivity, instead of TFP, as our performance variable. The results are qualitatively the same, pointing to short-run costs.

It is thus important to understand if these costs are broad-based, affecting different firms and sectors equally, or if we face heterogeneous effects.

5.2 Heterogenous Effects

In this section, we explore heterogeneous effects across firms with different productivity levels and in different sectors.

We start by extending equation [2] with an interaction variable (as described in the methodology section), and show that frontier firms are actually gaining from a less stringent regulatory framework in the intermediate sectors one year after the reforms, while laggards are losing (Table 5). However, productivity spillovers from frontier firms are positive, both in terms of pass-through and catching-up, at least partially compensating for the negative direct effects on laggard firms. These results may be explained by the fact that frontier firms are better equipped to deal with competitive pressures and to grasp the benefits of higher competition in upstream sectors, by using the additional profit margin to reduce prices. Laggards have more compressed profit margins and thus have less scope to do so. The results using the narrow regulatory impact indicator and LP as our performance measure are qualitatively in line with the core estimations.

To assess if different sectors are affected differently, we also estimate equation [2] by sector. Table 6 presents the main results for the different sectors. We show that while some sectors are facing short-term costs, some others, namely Agriculture, hunting, forestry and fishing, Other Business Activities, Real estate activities, Hotels & Restaurants, Fabricated metal products except machinery and equipment, and Transport and storage, have increased productivity growth already one year after the reforms. The results of the same regression but using the narrow version of the reform indicator, LP instead of TFP and with the distinction of the effect on frontier and laggard firms are available in Tables B1 to B5 in the Annex. Overall, the results are qualitatively the same, with some exceptions for specific sectors.[20]

[19] Details about the construction of *treated* and *control* groups available in Section 4.
[20] Note that the definition of the frontier depends on the performance indicator used; thus, some sectoral differences are expected when using different performance indicators.

Table 4 – Results of equation [2] estimation – baseline

Variable	ΔTFP	ΔTFP	ΔLP
ΔFrontier	0.99***	0.99***	4.45***
	(0.02)	(0.02)	(0.09)
DTF	0.6***	0.6***	0.51***
	(0)	(0)	(0)
Regimpact (wide)	0.07***	-	0.08***
	(0.01)		(0.02)
Regimpact (narrow)	-	0.13**	-
		(0.07)	
Small Firm	0.16***	0.16***	0.12***
	(0)	(0)	(0)
Medium Firm	0.30***	0.30***	0.29***
	(0)	(0)	(0.01)
Large Firm	0.43***	0.43***	0.52***
	(0.01)	(0.01)	(0.02)
Sectoral Fixed Effects	YES	YES	YES
Region Fixed Effects	YES	YES	YES
Time Fixed Effects	YES	YES	YES
Constant	-0.61***	-0.61***	-0.8***
	(0)	(0)	(0)
N	1,680,539	1,680,539	1,846,810
R^2	36%	36%	35%

Source: Authors' own calculations.

Table 5 – Results of equation [2] estimation – interaction [reform] and [frontier]

Variable	ΔTFP	ΔTFP	ΔLP
ΔFrontier	1.08***	1.08***	5.17***
	(0.02)	(0.02)	(0.09)
DTF	0.65***	0.65***	0.59***
	(0)	(0)	(0)
Regimpact (wide)	0.14***	-	0.17***
	(0.01)		(0.02)
Regimpact (narrow)	-	0.32***	-
		(0.06)	
DummyFrontier	0.86***	0.78***	1.23***
	(0)	(0)	(0.01)
DummyFrontier*Regimpact (wide)	-0.73***	-	-1.04***
	(0.02)		(0.02)
DummyFrontier*Regimpact (narrow)	-	-0.94***	-
		(0.02)	
Small Firm	0	0	0.1
	(0)	(0)	(0)
Medium Firm	0	0	0.2
	(0)	(0)	(0.01)
Large Firm	0	0	0.3
	(0.11)	(0.01)	(0.02)
Sectoral Fixed Effects	YES	YES	YES
Region Fixed Effects	YES	YES	YES
Time Fixed Effects	YES	YES	YES
Constant	-0.75***	-0.75***	-1.05***
	(0)	(0.01)	(0.01)
N	1,680,539	1,680,539	1,846,810
R^2	43%	43%	0.42

Source: Authors' own computations.

Table 6 – Results of equation [2] estimation – baseline by sector

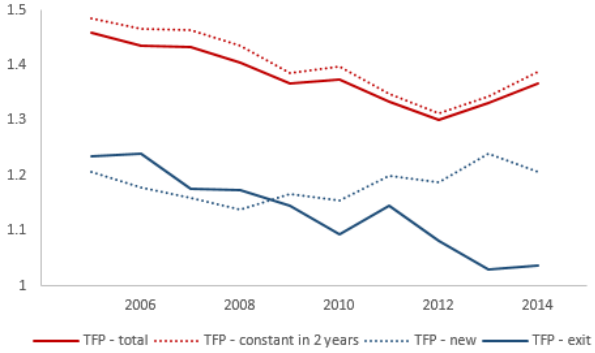
Variable / ATFP	ΔFrontier	DTF	Regimpact	N	R^2
Agriculture, hunting, forestry and fishing	1.75***	0.52***	-1.03***	64,069	41%
Mining and quarrying	-1.45***	0.32***	4.11***	6,877	29%
Food products, beverages and tobacco	-4.01***	0.53***	1.86***	50,122	36%
Wood and products of wood and cork	-2.91***	0.54***	0	23,500	29%
Pulp, paper, paper products, printing and publishing	-0.84***	0.5***	3.13***	21,024	50%
Coke, refined petroleum products and nuclear fuel	2	0.58***	2	1,410	37%
Chemicals and chemical products	-2	0.4***	4.22***	3,813	21%
Rubber and plastics products	1.66***	0.5***	2.05***	8,092	31%
Other non-metallic mineral products	4.26***	0.43***	5.4***	22,910	22%
Textiles, textile products, leather and footwear	-0.32***	0.53***	1.51***	72,709	26%
Basic metals	-9.67***	0.39***	-1	2,245	28%
Fabricated metal products except machinery and equipment	-11.51***	0.59***	-3.1***	49,380	34%
Machinery and equipment n.e.c	-3.64***	0.52***	1.5***	10,217	29%
Motor vehicles, trailers and semi-trailers	4.92***	0.48***	5***	3,705	29%
Other transport equipment	-4	0.62***	2	1,292	43%
Electricity, gas and water supply	1	0.57***	0	2,906	51%
Construction	-5.37***	0.74***	5.53***	302,312	42%
Transport and storage	-9.02***	0.55***	-1.39***	153,744	27%
Post and telecommunications	0	0.72***	2.49***	2,009	50%
Real estate activities	-11.62***	0.69***	-34.86***	67,638	45%
Office, accounting and computing machinery	-2	0	-17	119	13%
Electrical machinery and apparatus n.e.c	0	0.6***	1	2,542	40%
Radio, television and communication equipment	1	0.42***	-9	198	35%
Medical, precision and optical instruments	0	0.64***	0	6,677	40%
Manufacturing n.e.c; recycling	-5.76***	0.56***	2.83***	21,758	32%
Wholesale and retail trade, repairs	-8.4***	0.46***	0.08***	429,587	29%
Hotels and restaurants	-4.04***	0.55***	-4.34***	217,696	34%
Renting of machinery and equipment	-1.54***	0.53***	15.12***	1,633	34%
Computer and related activities	-0.95**	0.63***	5.15***	30,667	40%
Other Business Activities	12.26***	0.59***	-10.67***	95,321	34%
Research and Development	11	0.58***	70	1,770	41%

Source: Authors' own computations.

5.2 Improved Resource Allocation

Figure 3 shows the changing pattern of firm entry and exit in the last decade. While up to 2008 the firms exiting the market have higher productivity than those entering, from 2009 the pattern is reversed. In this section, we investigate whether this is related with product market reforms.

Figure 3 – TFP by status of firm: incumbents, new and exit firms



Source: Authors' own computations based on IES.

By estimating a probit model on the probability of exiting the market (as defined in equation [3] of the methodological section), we show that low productivity firms are more prone to exit the market. But deregulation in upstream sectors *per se* does not foster firm exit (Table 7); however, the coefficient of the interaction between productivity and the reform variable is negative, meaning that reforms are, as expected, increasing the exit rates for low productivity firms.

In Figure 4 we report the marginal effect of the interaction variable varying TFP, with regulation set at its maximum and minimum, and varying regulation. In Panel 4A, we show that the lower the level of productivity, the higher the impact of regulation on the exit probability. Similarly, by comparing two firms with different productivity levels (Panel 4B), one highly productive and the other less so, we again show that the difference between their exit probabilities is much higher in less rigid regulatory environments.

Following the aforementioned procedure to test the robustness of our calculations, the same equation was estimated using the narrow version of the reform indicator, and using LP instead of TFP (Table 7). The sign of the interaction term remains negative and significant for all specifications.

Table 7 – Results of equation [3] estimation - probability of exiting (Probit)

Pr(Exit)	Coef	Coef	Coef
Regimpact (wide)	0	-	4.59***
	(0.28)		(1.42)
Regimpact (narrow)	-	0	-
		(0.15)	
lnTFP	-0.13**	-0.14***	-
	(0.04)	(0.03)	
lnLP	-	-	-0.11**
			(0.06)
Regimpact (wide)*lnTFP	-0.2*	-	-
	(0.11)		
Regimpact (narrow)*lnTFP	-	-0.8***	-
		(0.2)	
Regimpact (wide)*lnLP	-	-	-0.51***
			(0.15)
Constant	-1.03**	-1.04***	0.02
	(0.05)	(0.05)	(0.5)
N	1,678,664	1,678,664	1,847,730
Pseudo R^2	1%	2%	5%

(Standard Errors adjusted for clusters in sector)
Source: Authors' own computations.

Figure 4 – Predictive Margins

Figure 4A – Predictive Margins (Fixing Regulatory Impact indicator)

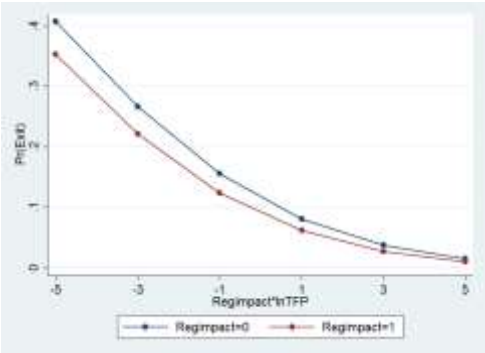
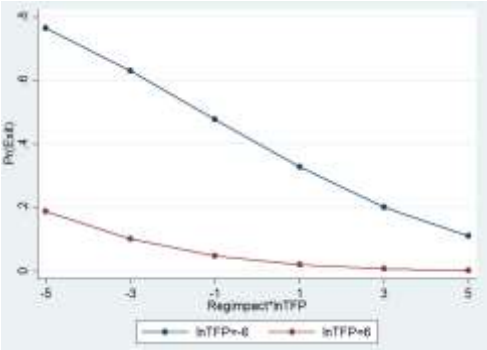


Figure 4B – Predictive Margins (Fixing lnTFP)

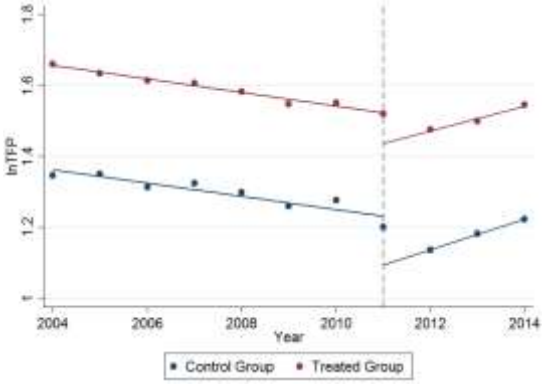


Source: Authors' own computations.

5.4 Enhanced resilience to shocks

We now use a difference in differences estimation to assess if firms in sectors most affected by reforms (*treated* group) were better equipped to face the 2011 economic crisis, as suggested by the preliminary evidence in Figure 5.

Figure 5 – Mean TFP levels for treated and control groups



Source: Author's own calculations using IES data for the years 2004-2014. N= 1,373,056. Note: This graph was produced using Binscatter command in Stata.

The results in Table 8 confirm that firms in *treated* sectors are more resilient to negative shocks when compared to the control group, i.e. in the face of the 2011 crisis their TFP decreased less markedly.

Table 8 – Difference in Differences Estimation Results

lnTFP	Complete	Without Electicity and Gas Sectors	Complete (LP)
Time	-0.12***	-0.12***	-0.29***
	(0)	(0)	(0.01)
Treated	0.29**	0.29**	0.12
	(0.11)	(0.11)	(0.2)
DiD	0.04**	0.04**	0.11***
	(0.01)	(0.01)	(0.02)
Cons	1.31***	1.31***	10.6***
	(0.01)	(0.01)	(0.02)
Controls	YES	YES	YES
N	1,373,056	1,373,056	1,490,905
R^2	3%	3%	1%

Source: Authors' own computations.

Ideally, we should have a placebo group, running the same *DiD* in a period with a crisis but no deregulation policies. However, this is not possible, as our dataset only covers the period starting in 2004. In any case, we perform two robustness checks based on the available data. First, we compute the same regression without the electricity and gas sectors. These sectors could potentially bias our results, as they were directly affected by the reforms (on top of the usual downstream effects affecting all sectors). The results remain unchanged, as we continue to see more resilience in the *treated* group (Table 8). In addition, using LP instead of TFP also keeps the results qualitatively unchanged.

6. Conclusion and way forward

In recent years, Portugal implemented a large number of structural reforms. Quantitative information on their effects in the economy is crucial for policy makers, as it allows fine-tuning past reform efforts and better designing future reforms. Taking stock of what was achieved so far is crucial to define the way forward.

In this study we focus on the effects of product market reforms, given their relevance in the Portuguese reform agenda in recent years, their large potential pay-offs and the usual resistance to reform, particularly acute in this area (with concentrated costs and diffuse benefits). In particular, we assess the short-run effects of product market reforms in upstream sectors on the firm-level productivity of downstream sectors, evaluating also the impact on the allocation of resources and on the resilience to adverse shocks. Short-term effects are particularly relevant given their role on the political economy of the reform process.

Relying on firm-level data for Portugal covering the period between 2004 and 2014, we show that the short-run impact of product market reforms on firm-level productivity is positive for the most productive firms (those belonging to the sectoral technological frontier), who are able to leverage on the increased

competitiveness in the upstream sectors.[21] Additionally, we show that the exit of the least productive is potentiated by the reform process, potentiating a better resource allocation in the economy. For those firms that stay in the market, there are second round effects from the gains at the frontier, as we find evidence of positive pass-through and catching-up mechanisms. In addition, our results corroborate existing studies that show that effects across sectors are differentiated: while some sectors are benefiting from upstream deregulation already after one year, some others see their productivity growth curbed. Finally, we find evidence that reforms increase firms' resilience to negative shocks.

Going forward, it would be important to enrich our results in a number of ways.

First, our analysis provides a partial picture of the effects of the reforms, as it focuses solely on the short-run. We opted for this time horizon because some of the reforms are very recent and our available time-series is not long. In any case, our assessment of the increased resilience to adverse shocks already points to these positive long-term effects. As more data becomes available, it will be possible to evaluate the longer-term effects of reforms on firms' productivity.

In addition, it would be informative to better understand the driving forces behind short-term costs. Following the literature, we could enlarge our analysis by accounting for the effect of the cycle. A preliminary attempt with the existing data shows that the effects of reforms before the financial and economic crisis are positive and only become negative during the downturn. However, a robust assessment would need to rely on a longer time-series. We could also explore the role of the initial framework conditions and the interactions with other reform areas, as existing literature highlights their relevance, in particular in the short-run.

Finally, and while total factor productivity is a key determinant of growth, a full assessment of the reforms' impact can only be done by also considering the impact on investment and labour utilisation (in particular on employment). Equity considerations are also key and it would thus be important to complement our firm-level analysis with worker or household level data.

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Annex

Table A – Literature review summary

Long-term effects		
Model based		IMF (2016); Andrés, Arce and Thomas (2014); Everaert and Schule (2008); Arpaia, Alfonso, Roeger, Varga and Veld (2007)
Empirical models		Égert and Gal (2016); IMF (2015); OECD (2015); Arnold and Barbosa (2015); Barnes, Bouis, Briard, Dougherty and Eris (2013); Bouis, Causa, Demmou, Duval and Zdzienicka (2012); Bouis and Duval (2011)
Short-term effects		
Model based		IMF (2016); Cacciatore, Duval, Fiori and Ghironi (2015); Eggertsson, Ferrero and Raffo (2013)
Empirical models	Productivity growth	Santos, Gouveia and Gonçalves (2017); Adhikari, Duval, Hu and Loungani (2016); Égert and Gal (2016); Gal and Hijzen (2016); Lanau and Topalova (2016); IMF (2016); Cacciatore and Fiore (2015); Dabla-Norris et al (2015); Bourles, Cette, Lopez, Mairesse and Nicoletti (2013); Bouis, Causa, Demmou, Duval and Zdzienicka (2012); Forlani (2012); Barone and Cingano (2011); Nicoletti and Scarpeta (2003)
	Entry and exit rates	Gal and Hijzen (2016); Lanau and Topalova (2016); European Commission (2005); Schiantarelli (2005)
	Mark-ups	Folque (2017); Amador and Soares (2013)
	Resilience	Cacciatori and Fiori (2016); Pelkmans, Montoya and Maravalle (2008); Duval, Elmeskov and Vogel (2007); Ernst, Gong and Semmler (2007)

Table B1 - The Impact of Product Market Reforms on TFP growth - by sector with interaction (*wide Regimpact*)

Variable						N	R^2
ΔTFP	**ΔFrontier**	**DTF**	**Regimpact**	**Dummy Frontier**	**DummyFrontier* Regimpact**		
Agriculture, hunting, forestry and fishing	1.88***	0.57***	-1.41***	0.56***	2.52***	64,059	44%
Mining and quarrying	-1.47***	0.57***	4.22***	0.81***	-2.04	6,577	34%
Food products, beverages and tobacco	-3.92***	0.58***	1.82***	0.44***	0.47	50,122	34%
Wood and products of wood and cork	-2.51***	0.59***	-0.41	0.65***	-0.2	23,500	35%
Pulp, paper, paper products, printing and publishing	-0.83***	0.55***	3.21***	0.67***	-2.34**	21,024	30%
Coke, refined petroleum products and nuclear fuel	1.17	0.6***	3.81	0.25	3.24	1,410	40%
Chemicals and chemical products	-1.77	0.42***	4.16***	0.17	1.08	3,813	23%
Rubber and plastics products	1.77***	0.56***	2.02***	0.25**	1.17	8,092	35%
Other non-metallic mineral products	4.19***	0.47***	5.46***	0.71***	-2.29***	22,910	26%
Textiles, textile products, leather and footwear	-0.16	0.58***	1.09***	0.28***	1.68***	72,709	32%
Basic metals	-8.79***	0.43***	-1.18	0.42	0.42	2,245	29%
Fabricated metal products except machinery and equipment	-10.28***	0.64***	-2.85***	0.5***	0	49,580	39%
Machinery and equipment n.e.c	-3.53***	0.58***	1.39***	0.59***	-0.52	10,217	37%
Motor vehicles, trailers and semi-trailers	4.85***	0.51***	4.76***	0.32**	0.47	3,705	33%
Other transport equipment	-2.85	0.68***	0.18	-0.48	13.15**	1,292	48%
Electricity, gas and water supply	0.81	0.62***	0.7***	1.11***	-0.94	2,906	54%
Construction	-5.39***	0.77***	5.27***	0.72***	4.22***	302,312	53%
Transport and storage	-9.38***	0.62***	-1.21***	1.5***	-2.6***	153,744	36%
Post and telecommunications	0.32	0.77***	2.12***	0.94	-1.49	2,009	56%
Real estate activities	-13.5***	0.74***	-41.98***	0.74***	29.41***	67,638	55%
Office, accounting and computing machinery	-1.5	0.07	-12.41	4.6**	-35.39**	119	17%
Electrical machinery and apparatus n.e.c	-0.16	0.65***	1.13	0.54	0.13	2,542	45%
Radio, television and communication equipment	1.22	0.51***	-9.83	0.4	2.35	198	37%
Medical, precision and optical instruments	0	0.69***	0.01	0.56	-0.61***	6,677	47%
Manufacturing n.e.c; recycling	-5.7***	0.62***	2.87***	0.66***	-0.59	21,758	39%
Wholesale and retail trade, repairs	-8.07***	0.51***	0.06***	0.54***	0.17***	429,587	33%
Hotels and restaurants	-3.8***	0.59***	-3.81***	0.78***	-2.99***	217,696	39%
Renting of machinery and equipment	-1.46***	0.58***	13.84***	0.06	0.06	1,633	38%
Computer and related activities	-0.71*	0.68***	4.49***	0.63***	0.3	30,667	46%
Other Business Activities	11.75***	0.65***	-10.5***	-0.3***	2.14***	95,321	42%
Research and Development	10.49	0.61***	68.67	2.7***	-31.28**	1,770	48%

Source: Authors' own computations using IES and OECD data for the years 2004-2014.

Table B2 – The Impact of Product Market Reforms on LP growth - by sector without interaction

Variable				N	R^2
ΔLP	ΔFrontier	DTF	Regimpact		
Agriculture, hunting, forestry and fishing	-78.09	0.49*	-6.34**	73,894	40%
Mining and quarrying	-7.72*	0.49*	5.61***	7,031	31%
Food products, beverages and tobacco	29.38*	0.49*	0.67*	52,599	36%
Wood and products of wood and cork	-23.99*	0.48*	-4.62*	24,574	30%
Pulp, paper, paper products, printing and publishing	17.9*	0.45*	6.9*	22,276	28%
Coke, refined petroleum products and nuclear fuel	487.26*	0.4*	41.31*	1,534	34%
Chemicals and chemical products	9.57***	0.4***	1.60	4,042	28%
Rubber and plastics products	6.55***	0.45***	1.24**	8,443	30%
Other non-metallic mineral products	6.99***	0.46***	2.95***	23,760	25%
Textiles, textile products, leather and footwear	0.60	0.44***	1.49***	74,738	29%
Basic metals	21.47***	0.29***	0.21	2,338	27%
Fabricated metal products except machinery and equipment	36.81***	0.58***	-0.91**	50,918	34%
Machinery and equipment n.e.c	12.57**	0.47***	1.84**	10,685	28%
Motor vehicles, trailers and semi-trailers	41.37***	0.52***	-1.05	3,834	33%
Other transport equipment	-0.03	0.62***	8.73**	1,347	39%
Electricity, gas and water supply	-1.75	0.34***	1.54***	4,948	44%
Construction	-23.03***	0.58***	0.99**	326,518	39%
Transport and storage	20.64***	0.41***	-0.96***	164,517	28%
Post and telecommunications	omitted	0.62***	-1.41	2,152	55%
Real estate activities	18.23***	0.56***	-5.91	106,335	43%
Office, accounting and computing machinery	-15.95	0.31**	-83.11	131	24%
Electrical machinery and apparatus n.e.c	-1.08	0.55***	-4.2***	2,680	39%
Radio, television and communication equipment	-12.21	0.46***	39.11	209	41%
Medical, precision and optical instruments	-10.34***	0.56***	-2.90	7,051	41%
Manufacturing n.e.c; recycling	51.99***	0.47***	5.28***	22,918	32%
Wholesale and retail trade, repairs	66.18***	0.42***	-0.66***	465,573	31%
Hotels and restaurants	-77.65***	0.62***	-3.89***	231,121	38%
Renting of machinery and equipment	35.91***	0.48***	-30.59***	2,059	37%
Computer and related activities	7.93***	0.55***	0.57	35,986	40%
Other Business Activities	29.55***	0.5***	0.06	107,250	36%
Research and Development	3.74	0.53***	3.27	2,295	42%

Source: Authors' own computations using IES and OECD data for the years 2004-2014.

Table B3 - The Impact of Product Market Reforms on LP growth - by sector with interaction

Variable						N	R^2
ΔLP	**ΔFrontier**	**DTF**	**Regimpact**	**Dummy**	**DummyFrontier***		
Agriculture, hunting, forestry and fishing	-63.81	0.57*	-5.95**	0.8*	4.32***	73,894	45%
Mining and quarrying	-7.05*	0.57*	5.03***	0.52	3.42	7,031	37%
Food products, beverages and tobacco	31.66*	0.56*	0.67**	0.85*	-0.13	52,599	40%
Wood and products of wood and cork	-24.8*	0.55*	-5.08***	0.74*	1.21	24,574	35%
Pulp, paper, paper products, printing and publishing	17.11*	0.51*	6.65*	0.79*	-0.81	22,276	33%
Coke, refined petroleum products and nuclear fuel	469.82*	0.45*	40.62*	1.05*	-2.40	1,534	37%
Chemicals and chemical products	10.04***	0.42***	1.48	0.35	1.50	4,042	30%
Rubber and plastics products	6.98***	0.52***	0.95	0.55***	1.41	8,443	35%
Other non-metallic mineral products	7.09***	0.52***	2.99***	0.8***	-0.29	23,760	29%
Textiles, textile products, leather and footwear	1.2**	0.53***	1.02***	0.54***	3.08***	74,738	34%
Basic metals	22.29***	0.34***	-0.05	0.52	0.67	2,338	28%
Fabricated metal products except machinery and equipment	35.56***	0.64***	-1.02***	0.62***	0.95	50,918	40%
Machinery and equipment n.e.c	11.94**	0.55***	1.41	0.6***	2.24	10,685	35%
Motor vehicles, trailers and semi-trailers	43.03***	0.58***	-1.45	0.78***	1.15	3,834	39%
Other transport equipment	0.35	0.69***	6.86	0.11	10.50	1,347	46%
Electricity, gas and water supply	-1.04	0.38***	1.4***	0.84***	0.25	4,948	42%
Construction	-25.97***	0.72***	0.34	0.81***	10.31***	326,518	50%
Transport and storage	20.43***	0.48***	-0.88***	1.01***	-0.72	164,517	33%
Post and telecommunications	omitted	0.7***	-1.53	0.94	-0.12	2,152	60%
Real estate activities	15.64***	0.65***	-9.8***	1.33***	22.94***	106,335	51%
Office, accounting and computing machinery	-19.37	0.36***	-96.17	6.54	-45.54	131	27%
Electrical machinery and apparatus n.e.c	-0.92	0.62***	-4.5***	0.32	4.60	2,680	43%
Radio, television and communication equipment	-12.99	0.47***	37.46	-6.19	54.98	209	42%
Medical, precision and optical instruments	-9.59***	0.63***	-2.59	0.88***	0.88	7,051	46%
Manufacturing n.e.c; recycling	54.25***	0.55***	5.33***	0.75***	1.04	22,918	38%
Wholesale and retail trade, repairs	64.21***	0.47***	-0.68***	0.64***	0.29***	465,573	35%
Hotels and restaurants	-75.75***	0.67***	-3.76***	0.72***	-0.21	231,121	44%
Renting of machinery and equipment	34.6***	0.54***	-31.4***	-0.22	14.92**	2,059	40%
Computer and related activities	8.71***	0.61***	-0.25	0.55***	5.35***	35,986	46%
Other Business Activities	27.38***	0.58***	0.01	0.59***	0.7**	107,250	42%
Research and Development	4.19	0.6***	3.07	1.52	-4.87	2,295	48%

Source: Authors' own computations using IES and OECD data for the years 2004-2014.

Table B4 – The Impact of Product Market Reforms on TFP growth - by sector without interaction (*narrow Regimpact*)

Variable				N	R^2
ΔTFP	**ΔFrontier**	**DTF**	**Regimpact**		
Agriculture, hunting, forestry and fishing	-0.51	0.52***	-4.11***	64,059	41%
Mining and quarrying	-0.17	0.52***	5.82***	6,577	29%
Food products, beverages and tobacco	-0.09	0.53***	2.98***	50,122	36%
Wood and products of wood and cork	-2.42***	0.54***	omitted	23,500	29%
Pulp, paper, paper products, printing and publishing	1.12***	0.5***	8.63***	21,024	26%
Coke, refined petroleum products and nuclear fuel	4.23***	0.59***	-4.56	1,410	37%
Chemicals and chemical products	1.6**	0.4***	4.55***	3,813	21%
Rubber and plastics products	-0.03	0.5***	4.35***	8,092	31%
Other non-metallic mineral products	0.94**	0.43***	3.44***	22,910	22%
Textiles, textile products, leather and footwear	0.44***	0.53***	2.89***	72,709	26%
Basic metals	14.20	0.39***	15.59	2,245	28%
Fabricated metal products except machinery and equipment	5.6***	0.59***	8.36***	49,580	32%
Machinery and equipment n.e.c	-1.53*	0.52***	3.3***	10,217	29%
Motor vehicles, trailers and semi-trailers	0.89	0.48***	8.06***	3,705	29%
Other transport equipment	-0.95	0.62***	3.64	1,292	43%
Electricity, gas and water supply	0.65	0.57***	0.52	2,906	51%
Construction	-0.94***	0.74***	5.33***	302,312	42%
Transport and storage	4.69**	0.55***	0.55***	153,744	27%
Post and telecommunications	0.91**	0.72***	3.27***	2,009	50%
Real estate activities	5.59***	0.69***	4.84***	67,638	45%
Office, accounting and computing machinery	0.97	0.06	2.64	119	13%
Electrical machinery and apparatus n.e.c	2.58	0.6***	11.61	2,542	40%
Radio, television and communication equipment	6.13	0.42***	8.35	198	35%
Medical, precision and optical instruments	-0.06	0.64***	0	6,677	40%
Manufacturing n.e.c; recycling	-0.33	0.56***	5.54***	21,758	32%
Wholesale and retail trade; repairs	-4.76***	0.46***	3.58***	429,587	29%
Hotels and restaurants	4.19***	0.55***	18.21***	217,696	34%
Renting of machinery and equipment	-0.01	0.53***	33.49***	1,633	34%
Computer and related activities	0.94***	0.63***	6.7***	30,667	40%
Other Business Activities	-0.07	0.59***	11.76***	95,321	34%
Research and Development	1.44	0.58***	13.28	1,770	41%

Source: Authors' own computations using IES and OECD data for the years 2004-2014.

Table B5 – The Impact of Product Market Reforms on TFP growth - by sector with interaction (*narrow Regimpact*)

Variable							
ΔTFP	**ΔFrontier**	**DTF**	**Regimpact**	**Dummy Frontier**	**DummyFrontier* Regimpact**	**N**	**R^2**
Agriculture, hunting, forestry and fishing	-0.68	-0.68*	-5.33*	0.57*	6.72***	64,059	44%
Mining and quarrying	-0.21	0.57*	6.35*	1*	-6.69***	6,577	35%
Food products, beverages and tobacco	0.02	0.58*	3.18*	0.56*	-1.87	50,122	40%
Wood and products of wood and cork	-2.11***	0.59*	omitted	0.85*	-5.62**	23,500	35%
Pulp, paper, paper products, printing and publishing	1.04*	0.55*	9.24*	9.24*	-10.57***	21,024	31%
Coke, refined petroleum products and nuclear fuel	4.91*	0.6*	-8.79*	0.19	6.99	1,410	40%
Chemicals and chemical products	1.51**	0.42***	5.1***	0.55***	-4.88	3,813	23%
Rubber and plastics products	0	0.56***	4.21***	0.25***	3.36	8,092	35%
Other non-metallic mineral products	0.98**	0.47***	3.7***	0.69***	-3.79***	22,910	26%
Textiles, textile products, leather and footwear	0.47***	0.58***	2.78***	0.57***	-3.96***	72,709	32%
Basic metals	13.73	0.44***	15.46	0.8***	-7.32***	2,245	29%
Fabricated metal products except machinery and equipment	5.47***	0.64***	7.98***	0.64***	-3.47***	49,580	39%
Machinery and equipment n.e.c	-1.65**	0.58***	3.87***	0.91***	-10.56***	10,217	37%
Motor vehicles, trailers and semi-trailers	1.01	0.51***	8.69***	0.72***	-8.95***	3,705	33%
Other transport equipment	-0.52	0.69***	2.90	0.71***	-3.06	1,292	48%
Electricity, gas and water supply	0.95	0.62***	0.73***	1.05***	-0.87	2,906	54%
Construction	-0.88***	0.77***	5.41***	1.05***	0	302,312	53%
Transport and storage	5***	0.62***	8.18***	1.91***	-4.11***	153,744	36%
Post and telecommunications	0.78**	0.77***	2.77***	0.88	-1.49	2,009	56%
Real estate activities	6.04***	0.74***	54.1***	1.44***	10.54	67,638	55%
Office, accounting and computing machinery	1.02	0.07	5.11	1.43	-38.25	119	15%
Electrical machinery and apparatus n.e.c	2.12	0.65***	11.70	1.09***	-11.70	2,542	45%
Radio, television and communication equipment	6.15	0.52***	6.01	-0.61	30.99	198	38%
Medical, precision and optical instruments	-0.10	0.69***	-0.28	0.49***	0.10	6,677	47%
Manufacturing n.e.c; recycling	-0.28	0.62***	6.19***	0.87***	-6.97***	21,758	39%
Wholesale and retail trade, repairs	-4.82***	0.51***	4.54***	1.11***	-13***	429,587	33%
Hotels and restaurants	3.96***	0.59***	18.62***	0.9***	-14.46***	217,696	39%
Renting of machinery and equipment	0	0.58***	35.32***	1.23**	-30.90	1,633	38%
Computer and related activities	0.94***	0.68***	6.17***	0.73***	-3.28	30,667	46%
Other Business Activities	0.03	0.65***	12.62***	0.9***	-16.7***	95,321	42%
Research and Development	1.58	0.61***	14.90	1.32***	-29.29	1,770	48%

Source: Authors' own computations using IES and OECD data for the years 2004-2014.

Structural reforms in justice and education: a model-based assessment of macroeconomic impacts for Portugal

Álvaro Aguiar, Ana Paula Ribeiro, Pedro Mazeda Gil *

Abstract

Within a partnership between GPEARI and CEF.UP, this report relies on a dynamic stochastic general equilibrium model with endogenous growth to assess the macroeconomic impact of some of the structural reforms put forward over 2010-2014 by Portugal in the areas of Justice and Education. In Justice, we cover for reforms impacting "Overall system efficiency" and "Insolvency regime", while in Education the focus is on "Development of early intervention strategies", "Promotion of school autonomy", "Introduction of vocational tracks" and "Consolidation of the implementation of curricula goals". In a first step, reform measures are associated with the impact on sectoral (Justice or Education) indicators. In a second step, these indicators are linked with microeconomic outcomes, which are then translated into shocks to the European Commission's QUEST III model with endogenous growth, allowing us to derive the expected impact on macroeconomic aggregates. Our results show that reforms deliver large potential effects in the medium-to-long-run, although dependent on the transmission mechanism. In Justice, the strongest effects stem from improvements in the insolvency regime (through both entrepreneurship and liquidity constraint mechanisms) that may potentially increase annual GDP up to 6.2% in 50 years. As for Education, the results (through both quantity and quality of schooling) are quite strong in the long-run, potentially reaching a 6.6% improvement in annual GDP over 50 years.

Foreword

The Office for Economic Policy and International Affairs (GPEARI) at the Ministry of Finance is responsible for quantifying the macroeconomic impact of structural reforms. In this context, and in line with the Portuguese National Reforms Programme 2015, GPEARI established a partnership with CEF.UP - Center for Economics and Finance at the University of Porto, Faculty of Economics, to assess the macroeconomic impact of structural reforms put forward in the recent years by Portugal in the sectors of Justice and Education.

This is the final report, which builds upon and completes two previous drafts – a preliminary one focused mainly on the definition of the methodology, with some illustrative results; and an intermediate one focusing already on the full operation of the methodology. This work was prepared by Álvaro Aguiar, Ana Paula Ribeiro, and Pedro Mazeda Gil, Professors at the Faculty of Economics, University of Porto, and researchers at CEF.UP.

Parts of the results and analysis have been previously presented and discussed in various meetings with GPEARI, the Ministry of Finance and other Portuguese Public Administration staff - namely from the Ministries of Justice and Education, to whom we thank the provision of data and very useful clarifications/explanations of relevant details; and with European Commission, European Central Bank and EU governments' representatives, in the context of the 39th meeting of the LIME working group of the Economic Policy Committee and of a technical meeting of the third post-programme surveillance mission

* Faculty of Economics and CEF.UP, University of Porto. Parts of the results were discussed in various meetings with the Ministry of Finance, Ministry of Justice and Ministry of Education, to whom we thank the provision of data and the very useful comments; and with the European Commission, European Central Bank and EU governments' representatives, in the context of the LIME working group of the Economic Policy Committee and of a technical meeting of the third post-programme surveillance mission. A presentation took also place at the Ministry of Finance on June 22, 2016, at the GPEARI/GEE Seminar, in the context of which several comments have been received, including from the session's discussants, Kevin Wiseman (IMF) and José R. Maria (Banco de Portugal). We thank, in particular, Ana Fontoura Gouveia and Sílvia Santos (Ministry of Finance) for continued fruitful collaboration, support and valuable comments on the successive drafts. We use the QUEST III model of the European Commission (DG ECFIN), to whom we thank. We are grateful to Jan in't Veld and Erik Canton and, in particular, to Janos Varga for the very timely help with the code. The opinions expressed are those of the authors and not necessarily of the institutions.

to Portugal. The most recent presentation has taken place at the Ministry of Finance on June 22, 2016, at the GPEARI/GEE Seminar “Structural reforms and economic performance – applied research”, in the context of which several useful comments have been received, including from the session’s designated discussants, Kevin Wiseman (IMF) and José R. Maria (Banco de Portugal).

We thank, in particular, Ana Gouveia and Sílvia Santos (of the Research and Economic Policy Unit, GPEARI, Ministry of Finance) for continued fruitful collaboration, support and valuable comments on the successive drafts.

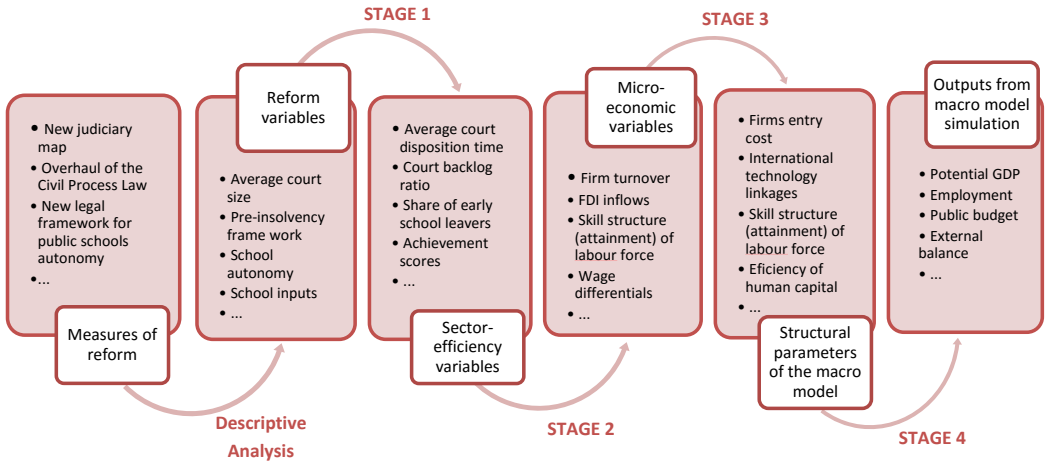
We use the QUEST III macroeconomic model of the European Commission (DG ECFIN), to whom we thank. We are grateful to Jan in’t Veld and Erik Canton and, in particular, to Janos Varga for the very timely help with the code of the QUEST III model.

Executive Summary

1. The Office for Economic Policy and International Affairs (GPEARI) at the Ministry of Finance is responsible for quantifying the macroeconomic impact of structural reforms. In this context, and in line with the Portuguese National Reforms Programme 2015, GPEARI established a partnership with CEF.UP - Center for Economics and Finance at the University of Porto, Faculty of Economics, to assess the macroeconomic impact of structural reforms put forward in the recent years by Portugal in the areas of Justice and Education. This final report starts with an introductory section that sets up the framework of analysis; Section 2 briefly reviews the relevant literature on the economic role of the sectors of Justice and Education; thereafter, the report proceeds with the two main blocks of this work: the definition and layout of the methodology (Section 3) and the results from the application of that methodology to the reforms in Justice and Education in Portugal over 2010-2014 (Section 4). This executive summary focuses on these two main blocks.

2. The **methodology** follows and extends the standard approach used by the European Commission (*e.g.*, Roeger *et al.*, 2008). It is based on two fundamental processes: (i) the quantification of the microeconomic effects of structural reforms, and (ii) the reaction of the macroeconomic model to such microeconomic effects. In order to quantify the microeconomic effects, we typically collect the reform measures, associate them with reform variables that impact on sectoral (Justice or Education) indicators which, in turn, affect some microeconomic variables – a process that requires detailed information from, and interaction with, the competent Ministries. These microeconomic effects are then translated into shocks to the (micro-founded) macroeconomic model, a key process that corresponds to the identification of the mechanisms of reform transmission to the macroeconomy. The ensuing computation (through simulation) of the dynamic system’s reaction to those shocks delivers the results of the reforms in terms of the main macroeconomic aggregates.

The following figure presents a general scheme that systematises the full methodological process, from the reform measures to the macroeconomic impacts. In Section 4, this scheme is applied/adapted to the transmission mechanisms of each reform (or group of reforms).



Source: own elaboration.

3. The general equilibrium dynamic **macroeconomic model** (DSGE), with microeconomic behavior of the economic agents that supports aggregate demand and supply, provides the quantification of the effects on the level of output, as well as on other macroeconomic aggregates, relevant for the different analytical time dimensions – short, medium and long run horizon -, *e.g.*, accumulation of production factors, employment, domestic and foreign components of aggregate demand, and public and external indebtedness. We use the existing extension of the European Commission's QUEST III model with endogenous growth, calibrated for the Portuguese economy by Varga *et al.* (2014). This choice has the paramount advantage of its previous and current use by the Directorate-General Economic and Financial Affairs of the European Commission in various simulation exercises concerning structural reform policy in both the European Union as a whole and the individual Member States.

4. The methodology requires that reform measures, individually or grouped, are translatable into quantitative (or quantifiable) reform variables (implementation/output indicators) and the availability of empirical (microeconometric) estimates of the quantitative relationship between the latter and sector-efficiency and micro variables. These requirements provide the main pre-conditions for selecting and grouping the reform measures for which we were able to quantify the corresponding macroeconomic effects.

The 2010-2014 **structural reforms in Justice and Education in Portugal** for which macroeconomic effects are computed and analysed in this work can be broadly grouped along the following policy areas:

Justice
Overall system efficiency
Insolvency regime
Education
Development of early intervention strategies
Promotion of school autonomy
Introduction of vocational tracks with strengthening and upgrading of vocational training
Consolidation of the implementation of curricula goals

The following table summarises the **transmission mechanisms** from (groups of) reforms to the macroeconomy that are explored in this work. The table singles out, for each implemented mechanism, the corresponding reform, sector-efficiency and micro variables, as well as the selected shock variables/parameters in the macro model**.**

		Transmission mechanism	Reform variable	Efficiency variable / micro variable	Shock in the Macro Model
A - Reforms in Justice					
A1	System efficiency	Firms' entry cost	Court size, litigation rate, courts-to-population ratio, share of public budget for courts ICT	Disposition time / firms net entry	Firms' entry costs (calibrated)
		Allocative efficiency	Court size, litigation rate, courts-to-population ratio, share of public budget for courts ICT	Disposition time / allocative efficiency	Labour productivity (estimated)
		Financing cost – interest rate spreads	Courts-to-population ratio, judges-to-population ratio	- /Rule of law index	Interest rate risk premium on capital (estimated)
		International technology linkages - FDI inflows	Court size, litigation rate, courts-to-population ratio, share of public budget for courts ICT	Backlog ratio / FDI inflows	International technology linkages (calibrated)
A2	Insolvency regime	Entrepreneurship/self -employment	Overall index of pre-insolvency framework	- / Self-employment rate	Leisure preferences (calibrated)
		Liquidity constraint	Overall index of pre-insolvency framework	- / -	Share of liquidity constrained households (calibrated)
B - Reforms in Education					
B1	Schooling attractiveness	School attainment	Share of early school leavers	- / Skill shares	Skill shares (simulated stock-flow model)
B2	Schooling quality	School achievement	Grade retention, school autonomy, instruction time	Achievement scores / wage differentials	Human capital efficiency (calibrated)

Source: own elaboration.

5. The results – **macroeconomic impacts** of the selected reforms – are presented and explained in detail in Section 4, for each area of reform and through each transmission mechanism. The following two tables (Justice and Education, respectively) present a summary of those results, providing a short description of each transmission mechanism and the respective macroeconomic results from the (in general) 2010-2014 reform measures.

Transmission mechanism / modelisation				Impacts on selected macro variables				
A - Reforms in Justice								
				1Y	5Y	10Y	20Y	50Y
A1	Overall system efficiency	Firms' entry cost	Public budget/GDP	0,042	0,013	0,008	-0,004	0,003
			Employment	0,060	0,028	0,036	0,038	0,023
			Real wages	0,143	0,188	0,236	0,293	0,356
			GDP	-0,029	0,049	0,135	0,214	0,268
			External balance/GDP	-0,003	0,009	0,001	-0,003	0,002
				1Y	5Y	10Y	20Y	50Y
		Allocative efficiency	Public budget/GDP	-0,028	0,019	0,005	-0,005	0,002
			Employment	-0,070	-0,002	0,002	0,001	-0,009
			Real wages	0,120	0,219	0,238	0,268	0,308
			GDP	0,147	0,239	0,264	0,295	0,326
			External balance/GDP	0,040	-0,002	-0,004	-0,003	0,001
				1Y	5Y	10Y	20Y	50Y
		Risk premium - intangible capital	Public budget/GDP	0,000	-0,003	0,000	0,002	0,000
			Employment	0,011	0,001	-0,001	-0,002	-0,001
			Real wages	0,026	0,035	0,044	0,053	0,062
			GDP	-0,005	0,006	0,018	0,030	0,041
			External balance/GDP	-0,002	0,001	0,001	0,000	0,000
				1Y	5Y	10Y	20Y	50Y
		Risk premium - tangible capital	Public budget/GDP	-0,038	-0,001	0,009	0,018	0,009
			Employment	0,045	0,130	0,111	0,085	0,053
			Real wages	-0,027	0,186	0,451	0,839	1,334
			GDP	0,051	0,361	0,634	1,026	1,527
			External balance/GDP	0,015	-0,046	-0,032	-0,010	0,015
				1Y	5Y	10Y	20Y	50Y
		International technology linkages - FDI inflows	Public budget/GDP	0,016	0,014	0,018	0,004	0,006
			Employment	0,040	-0,003	0,000	-0,003	-0,026
			Real wages	0,185	0,354	0,494	0,650	0,824
			GDP	0,025	0,297	0,515	0,718	0,887
			External balance/GDP	0,011	0,018	0,001	-0,005	0,003
				1Y	5Y	10Y	20Y	50Y
A2	Insolvency regime	Entrepreneurship/self-employment	Public budget/GDP	0,165	0,802	0,285	-0,221	0,067
			Employment	1,327	3,771	4,109	4,234	3,890
			Real wages	-2,002	-1,633	-1,365	-0,953	-0,330
			GDP	0,797	2,795	3,418	4,057	4,346
			External balance/GDP	0,448	0,070	-0,068	-0,099	0,029
				1Y	5Y	10Y	20Y	50Y
		Liquidity constraint	Public budget/GDP	2,511	1,468	0,327	-0,620	0,131
			Employment	0,251	1,156	1,949	2,167	1,435
			Real wages	-0,205	-0,483	-0,618	-0,365	0,103
			GDP	0,150	0,912	1,703	2,254	1,874
			External balance/GDP	0,036	0,114	-0,090	-0,143	0,044

Source: own elaboration. Note: Employment, real wages and GDP -- % change from initial steady state; public budget/GDP and external balance/GDP -- p.p. change from initial steady state. The impacts result from changes in reform variables between 2010 and 2012-2015, depending on the latest year with available data.

Transmission mechanism / modelisation			Impacts on selected macro variables				
B - Reforms in Education							
			1Y	5Y	10Y	20Y	50Y
B1 Schooling attractiveness	School attainment (baseline fertility rate scenario)	Public budget/GDP	0,007	0,026	0,026	0,034	0,040
		Employment	0,001	0,084	0,203	0,387	0,746
		Real wages	0,035	0,277	0,588	1,366	3,924
		GDP	0,099	0,484	1,025	2,230	5,827
		External balance/GDP	0,020	0,026	0,015	0,001	-0,022
			1Y	5Y	10Y	20Y	50Y
	School attainment (low fertility rate scenario)	Public budget/GDP	0,005	0,014	0,014	0,019	0,023
		Employment	0,001	0,041	0,103	0,205	0,444
		Real wages	0,019	0,140	0,300	0,719	2,248
		GDP	0,051	0,243	0,524	1,178	3,361
		External balance/GDP	0,008	0,013	0,008	0,002	-0,014
			1Y	5Y	10Y	20Y	50Y
B2 Schooling quality	School achievement	Public budget/GDP	0,001	0,007	0,008	0,008	-0,007
		Employment	-0,008	-0,013	-0,019	-0,035	-0,079
		Real wages	0,013	0,057	0,116	0,258	0,672
		GDP	0,010	0,057	0,124	0,286	0,738
		External balance/GDP	0,007	0,008	0,006	0,003	-0,005

Source: own elaboration. Note: Employment, real wages and GDP -- % change from initial steady state; public budget/GDP and external balance/GDP -- p.p. change from initial steady state. The impacts result from changes in reform variables between 2009 and 2012-2015, depending on the latest year with available data.

The results show that the considered reforms have sizeable and positive potential macroeconomic impacts in the medium-to-long-run, although dependent on the transmission mechanism (particularly in Justice).

Considering the reforms that have improved the overall system efficiency, the lon-run (50 years) impacts on annual GDP range from a 0.268% (0.135% in the medium-run – 10 years) increase through the firms' entry cost mechanism to a 1.568% (0.652% already in the medium-run) increase through the risk premium channel. However, the strongest effects, by far, come potentially from improvements in the insolvency regime (accounting for both entrepreneurship and liquidity constraint mechanisms): if credible, such improvements can be perceived as a regime change and potentially increase annual GDP by about 5.1% in 10 years and 6.2% in 50 years.

As for the considered Education reforms, the results (accounting for both quantity and quality of schooling) take longer to materialise due to the typical cohort effects, but are quite strong in the long-run, potentially reaching about a 4.1% to 6.6% (depending on the scenario for the fertility rate) improvement in annual GDP over 50 years.

6. The translation of reform measures into quantifiable changes in structural indicators in the macroeconomic model and the ensuing impact assessment through simulation embody a substantial degree of **uncertainty**. For that reason, it must be stressed that these are **just potential** effects of the considered reforms, to be interpreted with caution.

The work reported here is inevitably work in progress. In some cases, reform variables and sector-efficiency indicators need to be updated as soon as more recent ones become available – the schooling quality reform variables available from OECD-Pisa database (instruction time and school autonomy), currently available up to 2012 only, constitute an obvious case. This process of assessing macroeconomic impacts of reforms will largely gain, both in quantity and quality, as more (and more detailed) microeconometric assessments of individual reforms become available. In general, future design of reforms can also help this process of assessment substantially by improving the quantification of reform variables end sector-efficiency objectives or expected outcomes.

Introduction

Structural reforms are improvements triggered by public policies in a country's political, economic and social institutions, with the ultimate objective of increasing social welfare in a sustained way. In a narrow microeconomic/sectoral definition, structural reforms are improvements in the effectiveness and efficiency of institutions. However, as the functioning of those institutions impinges on the creation and distribution of wealth, reforms have macroeconomic effects and, ultimately, affect social welfare.

Structural reforms are pursued with a view to permanent effects, sustained over time, and, very often, through a gradual implementation process. Moreover, macroeconomic and welfare effects are slower to phase in than the direct immediate effects on institutions. Therefore, the analysis of the macroeconomic effects of reforms requires a **medium/long-run horizon**.

The key macroeconomic effect of structural reforms is on (i) the capacity of the economy to produce wealth, which can be assessed through the level of medium/long-run output and productivity (**"potential output"**); although not explored in this report, in addition to the level of output reforms may also affect (ii) its long-run rate of growth ("economic growth"), (iii) the flexibility of the economy in reaction to external shocks and institutional changes ("volatility"), including the improvements in the effectiveness of economic policy brought about by structural reforms; and (iv) income and wealth distribution. The latter requires a heterogeneous-agent macro model, which seems at the moment too complex to consider within the DSGE-QUEST model used in this study; it is, therefore, outside the current scope of the work, but it is a promising candidate for future developments within this research.[1] This report focuses mainly on the improvements in the level of medium/long-run output (and related macroeconomic aggregates) brought about by the improvements in the sectors of **Justice** and **Education**.[2]

The methodology of this study, following the standard approach used by the European Commission, is based on two fundamental processes: (i) the **quantification of the microeconomic effects of structural reforms**, and (ii) the **reaction of the macroeconomic model** to such microeconomic effects.

As for the quantification of microeconomic effects, we try to follow - when possible and constrained by the existing theoretical and empirical economic literature - the impact path of each reform measure or group of measures:

$$\text{reform measure(s)} \rightarrow \text{reform variable(s)} \rightarrow \text{sectoral parameter indicator(s)}.$$

In many cases, however, it is clearly far-fetched to establish a direct mapping from each reform measure (or group of measures), or even each reform variable(s), to sectoral performance. We nevertheless reasonably interpret the improvements in sectoral performance indicators as resulting largely from past and ongoing structural reforms. It follows that the conversion of sectoral performance indicators into quantified microeconomic indicators (based on the existent theoretical and empirical literature) provides a proxy for the **quantification of microeconomic effects of structural reforms**; such effects, in turn, are used as **shocks to the parameters** (or to exogenous variables) **of the macroeconomic model**, in the context of the microeconomic foundations on which the model is built. By changing the structural parameters, the shocks trigger the general equilibrium dynamic inter-relations between the macroeconomic aggregates, yielding the short, medium and long-run results, which, in this way, can be consistently interpreted as macroeconomic impacts of the structural reforms.

In fact, using a general equilibrium framework with microeconomic behavior of the economic agents that support aggregate demand and supply, the **macroeconomic model** provides the quantification of the effects on the level of output, as well as on other variables and macroeconomic equilibria/disequilibria, relevant for the different analytical time dimensions – short, medium and long run horizon -, *e.g.*, accumulation of production factors, employment creation and structural unemployment, domestic and foreign components of aggregate demand, and public and external indebtedness. For this purpose, it is advisable to use a dynamic stochastic general equilibrium (DSGE) model of the Portuguese economy, in

[1] The full consideration of the economic growth effect (permanent increases in the rate of growth) would also require a more complex integration of a fully endogenous growth mechanism within the DSGE model, which we did not attempt in this report.

[2] The reform measures considered in this report are described In the following documents of the Portuguese government: "Managing the Adjustment Programme" Estrutura de Acompanhamento dos Memorandos - ESAME, May 2014; "Programa Nacional de Reformas 2015," Ministério das Finanças, April 2015; and Programa de Estabilidade 2015-2019," Ministério das Finanças, April 2015.

the context of the European Union. In particular, we use an existing extension of the European Commission's QUEST III model with endogenous growth, calibrated for the Portuguese economy by Varga *et al.* (2014). The choice of the QUEST III model has the paramount advantage of its previous and current use by the Directorate-General Economic and Financial Affairs of the European Commission in various simulation exercises concerning structural reform policy in both the European Union as a whole and the individual Member States.

Future improvements in both processes - microeconomic effects of structural reforms and the reaction of the macroeconomic model - require research investment along the following lines (i) further exploration of the macroeconomic model in the context of the Portuguese economy and in possible developments of its building blocks in order to accommodate some specific objectives/effects; ii) further quantification of the microeconomic effects of the reforms, which depends, to a great extent, on the actual degree of implementation and on the timing of propagation of effects, thus requiring specific information and knowledge about several dimensions of the reforms; and (iii) further interpretation and analysis of the macroeconomic model's reaction to the structural shocks, so that the potential benefits from this methodology can be fully reaped.

This report describes and explains the methodology for assessing macroeconomic impacts of reforms and applies it to the selected structural reforms in Justice and Education. To do so, we review, in Section 2, the economic literature on selected channels through which Education and Justice may impact the macroeconomic variables; Section 3 presents the methodology followed in this study; Section 4 puts the methodology to use, by concretising the sequence of processes mentioned above, running the macroeconomic model with shocks to the parameters/exogenous variables coming from the reform measures, and concluding with the interpretation of the results, *i.e.*, the simulated impacts of the reforms on the main macroeconomic indicators. Section 5 concludes with a focus on the main results, also calling the attention to their potential nature due to the uncertainty involved in this type of modeling, and suggesting some future improvements related to the process of assessment.

1. Literature review on the effects of Justice and Education on the macroeconomy

The impact of efficiency improvements in **Justice** on macroeconomic performance has received renewed attention from recent literature.[3] The main focus falls on longer term effects on economic growth (*e.g.*, Haidar, 2012; Djankov *et al*., 2006), through higher competition between firms (measured, for instance, by higher entry rates), attractiveness of foreign direct investment (FDI), better financing conditions (longer maturity and lower interest rates) and incentives to investment - in the sense that investment is a vehicle for the incorporation of technological advances and for improvements in the allocation of resources, promoting more productive, innovative and better dimensioned firms (*e.g.*, Gianfreda and Vallanti, 2013; Garcia-Posada and Mora-Sanguinetti, 2012).

According to the relevant literature, for instance a smaller number of courts coupled with high judicial fees tend to lower the incentives towards the inflows of litigious cases and towards successive reassessments from higher-order courts. Consequently, this is expected to decrease the number of unsolved cases *per capita* (backlog ratio), thereby improving the efficiency of the judicial system (*e.g.*, Chiarloni, 1999). The existence of rather strict criteria for lawyers to be allowed to plead before different high-order courts also reduces the inflows of litigious cases (Lupo, 2013).

Regarding court restructuring, the reduction in the number of courts allows the exploitation of scale economies that improve the specialisation degree of each judge, the resolution time of the case (supply-side impacts) and the consistency of decisions, and is also expected to increase the number of resolved cases (OECD, 2015). Besides the number and the average size of courts, the literature refers to the relationship between other indicators of implementation of reforms (*e.g.*, fraction of the public budget devoted to ICT, the incidence of specialised courts, or even indicators capturing the average duration of the different stages of a litigious process or the system of governance of the courts) and a number of result indicators of reform implementation (Palumbo *et al.*, 2013).

As regards the empirical link between judicial efficiency and economic performance, *e.g.*, Ardagna and Lusardi (2008) and Berkowitz *et al.* (2006) find a significantly positive relationship between efficiency of the judicial system and the technological component of net exports. Several other empirical studies highlight

[3] See, *e.g.*, the recent survey by Gouveia *et al*. (2016).

the channel from judiciary efficiency to the ease of creation of new firms (*e.g.*, Giacomelli and Menon, 2013; García-Posada and Mora-Sanguinetti, 2014). As for FDI inflows - which can be another powerful channel of technological transmission - Lorenzani and Lucidi (2014) and Barkbu *et al.* (2012) estimate positive impacts from the efficiency of the judicial system. The literature adds evidence of positive correlation between judicial efficiency and the average size of firms (*e.g.*, Giacomelli and Menon, 2013; Beck *et al.*, 2006), which, in turn, is positively correlated downstream with productivity, survival rates and profitability (*e.g.*, Beck *et al.*, 2005) and, thus, with economic growth.

A strong contract enforcement system, including in handling insolvency processes, reduces the costs of firms' external finance and increases loan maturities (*e.g.*, Bae and Goyal, 2009; Laeven and Majnoni, 2005). This improves firms' financial restrictions and, in particular, the access to longer term financing, which is crucial for investment decisions (Jappelli *et al.*, 2005; Djankov *et al.*, 2008).

Contract enforcement is strongly related to the extent to which property rights are protected in a country as they affect the lenders incentives to monitor as well as their ability to recontract. Declining credit quality often results in lenders raising interest rates, demanding more collateral, shortening loan maturity, and further restricting future activities. This recontracting is costly when property rights are poorly enforced. Poor enforcement lowers recovery rates and increases the time spent in repossessing collateral following default (Bae and Goyal, 2009).

Laeven and Majnoni (2005) examine the effect of judicial protection of property rights on country-level interest rate spreads for bank financing. The impact of a more efficient organization and enforcement of justice on interest rates is not unambiguous. While there is clearly a positive effect of an increased recovery in the event of default on (reducing) the lending spread, there is also a negative impact related to a composition bias effect as riskier and previously rationed bank customers may represent a larger share of borrowers, as a result of more efficient judicial procedures, and will, in fact, carry higher rates that may offset the lower rates possibly charged. This may explain contradicting empirical results.

Strong contract enforcement also reduces the probability of a temporary liquidity shortage becoming an insolvency situation, often with weak creditor protection (*e.g.*, Safavian and Sharma, 2007) and negative impact in output and employment. In addition, the incidence of cases increases with the time it takes for case resolution: longer processes, during which the Law may actually change, may compromise the consistency of decisions, generating uncertainty and reducing the trust of the economic agents in the judicial system (Muiznieks, 2012).

Considering, in particular, the insolvency regime, Carpus Carcea *et al.* (2015) argue that an efficient pre-insolvency framework, besides enabling early rescue of some business (Djankov *et al.*, 2008) and limiting economic and social consequences of bankruptcy (Fan and White, 2003; European Commission, 2011), may reduce legal consequences of personal insolvency and can promote entrepreneurship (Jackson, 1985; Adler *et al*., 2000; Lee *et al.*, 2007). Moreover, in the context of several countries experiencing a situation of private sector debt reversal (as studied by Carpus Carcea *et al.*, 2015), well-functioning insolvency frameworks - especially if combined with incentives to use other options, including out-of-court procedures and early rescue mechanisms - reduce the deleveraging costs on domestic demand, thereby helping relax liquidity constraints, smoothing the adjustment and mitigating its macroeconomic costs (Ruscher and Wolff, 2012; IMF, 2013b).[4]

In what concerns **Education**, its relationship with macroeconomic performance has been approached in the literature, both theoretical and empirical, along two main vectors: (i) the level and/or pace of accumulation of human capital, commonly measured by schooling level indicators (*e.g.*, seminal studies by Lucas, 1988; and Mankiw *et al.*, 1992); and (ii) the quality of human capital, measured by indicators of cognitive and occupational skills (*e.g.,* Hanushek e Kimko, 2000).

The traditional approach to the determinants of human capital measures the stock of human capital through school attainment (number of years in school). School attainment has been the central focus of the literature and politicians since Mincer's (1970, 1974) seminal work identified schooling as the prime proxy for human capital and individual labour market skills.

Earlier studies relating the quantitative measures of human capital (in level or in changes) to economic growth, based on the rationale that human capital improves efficiency in production, where somewhat

[4] For a more comprehensive review of the channels through which the bankruptcy regime affects the economic variables, see, *e.g.*, Gouveia *et al.* (2016).

disappointing, often yielding a statistically nonsignificant relationship, namely in cross-section and panel data samples. However, more recent research, by controlling for measurement errors contained in the international databases, has been able to present more clearly a positive and significant relationship between human capital and economic growth (*e.g.*, De la Fuente and Doménech, 2006; Cohen and Soto, 2007).

A recent alternative approach recognises instead that a problem with the school attainment approach comes from the lack of adjustment for schooling quality. In order to tackle the measurement problem of labour force quality directly, a strand of the literature emerged that constructs measures of quality based on student cognitive performance (achievement) on various international tests of academic achievement in mathematics and science (*e.g.*, PISA and TIMSS scores; see OECD, 2013; see also Hanushek and Kimko, 2000, for an early academic contribution on this topic). Research has found a strong positive relationship between achievement and several outcome variables, namely labour-market outcomes and macroeconomic (GDP) growth (*e.g.*, Hanushek and Woessmann, 2012).

Yet simply knowing that the individuals' cognitive skills differences are important does not provide a guide to policies that might promote more skills. Indeed, a wide variety of policies have been implemented within various countries without much evidence of success in either achievement (acquired skills) or economic terms (Hanushek and Woessmann, 2011).

Much research has focused on why achievement differs across students and across countries, by studying what is often called the 'international education production function'. The literature has taken a variety of perspectives and approaches and faced a number of technical and methodological challenges. The general objective is to sort out the causal impacts of school and institutional factors (features that can potentially be manipulated through policy) from other influences on achievement including family background, students' characteristics, neighborhood influences, and the like (see, *e.g.*, Hanushek and Woessmann, 2010, for an extensive review of the empirical literature).

Another, parallel, strand of literature, consisting of structural analysis based on theoretical models of economic growth, has been exploring the connections between human capital and innovation and/or technology absorption processes (in the line of, *e.g.*, Nelson and Phelps, 1966; and Romer, 1990), as well as between human capital and institutions (*e.g.*, Jones and Romer, 2010; Acemoglu *et al.*, 2005). Recent research along these lines explores how economic growth is linked to the structure of human capital (the share of high-skilled individuals - *i.e.* with higher education level of formal schooling – in the labour force), highlighting a positive relationship after properly controlling for the distance of each economy to the technological frontier (Vandenbussche *et al.*, 2006; Ang *et al.*, 2011) or for the level of barriers to entry in high-tech *versus* low-tech industries (Gil *et al.*, 2012, 2015).

From this review of the existing literature, we conclude that structural reforms that bring about improvements in Justice and Education are expected to have medium and long term macroeconomic effects in light of the most recent empirical literature; in the case of Justice through their impact on firms' entry and exit, inflows of FDI and firms' external finance costs, for instance; and, in the case of Education, through their impact on the stock and quality of human capital in the economy.

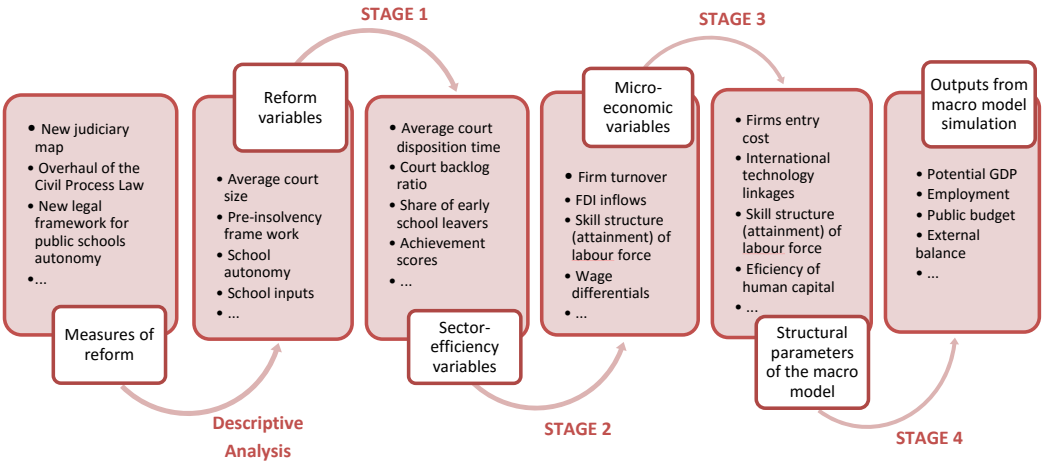
2. Adopted methodology: from the measures of structural reform to the analytical macroeconomic model

The economic effects arising from structural reforms are necessarily indirect and essentially non-observable, since the transmission mechanisms linking those measures to the economic variables (firstly, at the micro level and, secondly, at the macro level) tend to be complex and diffuse. In addition, the economic variables are certainly subject to the influence of a number of factors beyond those strictly connected with the structural reforms under study.

Moreover, the timing of the effects is hard to pin down and, as such, it complicates the analysis, both because the full effects of structural reforms are typically only accrued in the medium to long run and because reforms have their largest impact once confidence and economic activity pick up and recovery takes place under the better functioning market conditions created by the reforms.

Thus, with a view to identifying and quantifying the chain of effects in place, we adopt the approach depicted in Figure 1 for examples of structural in Justice and Education, in line with the state-of-the-art described in the literature (*e.g.*, OCDE, 2013; Lorenzani and Lucidi, 2014; Roeger *et al.*, 2008).

Figure 1. Methodological stages with a view to assessing the macroeconomic impact of structural reforms in Justice and Education



Source: own elaboration.

We assume that the transmission mechanisms unfold in the following stylized way:

(STAGE 1) the measures of reform and the respective reform variables (assessed by implementation/output indicators) have a direct downstream effect on the sectoral efficiency variables (assessed by result/outcome indicators – either observed or estimated);

(STAGE 2) the sectoral efficiency variables have a downstream effect on several microeconomic variables (microeconomic impact);

(STAGE 3) the changes in these microeconomic variables are translated into shocks to parameters in the macroeconomic model;

(STAGE 4) The estimated shocks are simulated in the macroeconomic model and the resulting impact on the macroeconomic variables is interpreted as the quantified macroeconomic impact of the reform.

In this context, we will first conduct a descriptive analysis which allows us to group the specific measures of structural reform already implemented into broader categories of structural reforms, namely bearing in mind the direct effect of each specific measure on the selected sectoral efficiency variables. Secondly, we consider the results of previous econometric studies available in the literature, which, based on cross-section or panel data for a number of countries, compute estimates of the effects of STAGES 1 and 2 described earlier.

Thirdly, the quantification of the macroeconomic effects (STAGES 3 and 4) are undertaken by means of simulation under the framework of an analytical macroeconomic model. In STAGE 3, we use the (estimated) effects on the microeconomic variables (STAGE 2) in order to quantify the exogenous shocks that will apply to the key structural parameters (or exogenous variables) of the macroeconomic model. [5] These shocks are a proxy of the measures of structural reform in the context of the analytical macroeconomic model. Finally, in STAGE 4, we use the analytical model, which captures several macroeconomic transmission mechanisms, to assess the impact of the reforms on potential aggregate output and economic growth, as well as on several other macroeconomic variables with relevance over the different time horizons (short, medium, and long run), *e.g.*, production factors accumulation, structural unemployment, domestic and external aggregate demand, public budget and external balances dynamics.

[5]Figure A1 in Appendix A, depicting a schematic structure of the selected macroeconomic model, provides two examples of integration of microeconomic variables as vehicles of reform measures: the impact of Justice reforms on FDI is carried through the parameter with a shadowed circle (A^w); and in Education, impacts on microeconomic variables can be mimicked by a shock in the skill composition of the workforce, variables under the shadowed rectangle.

The impact of the structural reforms over these macroeconomic dimensions is assessed by comparing the scenario with structural reform shocks and the baseline scenario, without any shocks. To consider the impact on the economy of changes in policy, the shocks are introduced individually in the model, holding all other parameters unchanged at their baseline levels and letting the endogenous variables respond appropriately. The simulation results are then compared to the baseline scenario, thereby isolating the effect of each structural reform shock on the relevant macroeconomic variables.

Nevertheless, special attention should be paid to the qualitative and/or protracted nature of many of the measures of structural reform and, as remarked above, the complex and diffuse character of their transmission mechanisms vis-à-vis the necessarily stylized structure of the analytical macroeconomic model. In this context, the mapping of specific policy interventions within the structure of the model may not always be obvious. Indeed, the process of selection, quantification[6] and interconnection of the three types of variables (reform, sectoral efficiency, and microeconomic variables) and the respective mapping into the structural parameters of the model – with a view to operationalizing the different stages of the transmission mechanisms described above – may not be unequivocal, requiring the use of microeconomic evidence and theory, but also a degree of judgment. Therefore, the interaction between the team of consultants and GPEARI, as well as other entities familiar with the suite of measures of reform under study, is deemed of utmost importance in order to guarantee a sound and sensible implementation of the model-based evaluation of the macroeconomic impact of structural reforms.

Summing up, the quantification of the macroeconomic impact of structural reforms in the sectors of Justice and Education relies on two fundamental blocks:

(i) The **previous quantification of the microeconomic effects of the structural reforms**, *i.e.*, the estimated quantitative relationship between typical reform and sectoral efficiency variables (output and outcome indicators) and the relevant microeconomic variables, by considering the econometric studies available from the recent literature pertaining to the estimation of the microeconomic impact of structural reforms in Justice and Education on country samples of cross-section or panel data.

(ii) These results, in turn, allow us to quantify the exogenous (policy) **shocks on the key structural parameters of the macroeconomic model**, and are a proxy of the measures of structural reform under study. This approach is feasible because the macroeconomic model is built on microeconomic fundamentals, which allow one to give a precise economic interpretation to the structural (primitive) parameters of the model.

Dynamic general equilibrium macroeconomic model

The macroeconomic model follows the structure typically found in the state-of-the-art dynamic general equilibrium macroeconomic models with microeconomic fundamentals (*e.g.*, Roeger *et al*., 2008 – QUEST model of the European Commission; Kumhof *et al*., 2010 – GIMF model of the IMF; Almeida *et al.*, 2013 – PESSOA model of the Banco de Portugal), now widely used for the structural quantitative analysis of the effects of macroeconomic policies. Therefore, it is a macroeconomic model that belongs to the class of micro-founded New-Keynesian Dynamic Stochastic General Equilibrium (DSGE) models, built for a small open economy belonging to a monetary union.

In particular, we use an existing extension of the European Commission's QUEST III model with endogenous growth, as developed by Roeger *et al*. (2008). This extension of the QUEST III model is sufficiently detailed to be able to address a large array of areas of structural reforms and has been applied in various simulation exercises concerning structural reform policy scenarios by the Directorate-General Economic and Financial Affairs of the European Commission, considering both the European Union as a whole and the individual Member States (see, e.g., Roeger *et al*., 2008; D'Auria *et al*., 2009; Varga and in't Veld, 2014; Varga *et al*., 2014). In our exercises, we consider the calibration of the model for the Portuguese economy as detailed in Varga *et al*. (2014).

The model has the following four analytical blocks and features:

(I) Households (workers/consumers)

[6]Herein the process includes an assessment of the degree of implementation of each structural reform, which in many cases is also not obvious.

- Two types of agents – agents without liquidity constraints, who maximize intertemporal utility by choice of consumption and leisure; liquidity constrained agents, characterized by Keynesian behavior;
- Three types of labour/human capital, measured by the level of educational attainment and occupation (high-skilled, medium-skilled, and low-skilled) and weighed by quality factors;
- Imperfect competition in the labour market, with the presence of labour unions (collective wage setting) and nominal indexation of wages.

(II) Firms (producers/investors)

- Three sectors of activity: final-good sector, intermediate-good sector and R&D sector, with imperfect competition in the former two (thus implying the existence of a profit-maximising mark-up over marginal cost).
- Fixed entry costs into the final-good and the intermediate-good sectors.
- R&D activities featuring intertemporal externalities and international technology linkages.

(III) Fiscal policy authority (government) that follows feedback budget rules, linking the dynamics of the public budget balance and the ratio of public debt to GDP, with a view to stabilising the latter in the long run at a given target.[7]

(IV) Open economy (international trade flows and technological spillovers via FDI inflows).

We underline the fact that this is a version of the macroeconomic DSGE model that features endogenous economic growth (based on R&D activities and human capital), combining a long-run dynamic equilibrium (a "balanced growth path") with transitional dynamics effects. Therefore, it is well fit to study the macroeconomic impact of structural reforms, as the latter tend to have relevant effects over the medium to the long run. We also emphasise that the model considers imperfections at the financial and labour market levels (liquidity constraints, collective wage setting, etc.), features that deserve special attention under the present context of the Portuguese economy.

Appendix A presents a simplified flow chart of the model developed by Roeger *et al.* (2008). For a detailed analytical description of the model, we refer the reader to Roeger *et al*. (2008) (a similar description can also be found in, e.g., Varga *et al*., 2014, and the Appendix of D'Auria *et al*., 2009).

4. Reforms, transmission mechanisms and resulting macroeconomic impacts

As explained above in Section 3, the methodology requires that reform measures, individually or grouped, are translatable into quantitative (or quantifiable) reform variables (implementation/output indicators) and the availability of empirical (microeconometric) estimates of the quantitative relationship between the latter and sector-efficiency and micro variables. These requirements provide the main pre-conditions for selecting and grouping the reform measures for which we are able to quantify the corresponding macroeconomic effects.

The **structural reforms in Justice and Education in Portugal** [8] can be broadly grouped along the following policy areas:

Justice
Overall system efficiency
Insolvency regime
Corruption
Intellectual property rights
Bureaucracy an court management

[7] That is, the stabilisation is not instantaneous but is only achieved when the economy approaches the (new) steady state. The assumption of no change in the steady-state debt ratio allows one to focus on the direct effects of structural reforms excluding debt-consolidation effects.

[8] As reported in ESAME (2014) and in Ministério das Finanças (2015a and 2015b).

Education
Development of early intervention strategies
Promotion of school autonomy
Introduction of vocational tracks with strengthening and upgrading of vocational training
Consolidation of the implementation of curricula goals
Improvement of lifelong learning
Management / Infrastructures

Tables B1 and B2 in Appendix B present the detailed list of reform measures in Justice and Education put forward by Portugal, corresponding to the reform areas described above. Those tables also present a qualitative relationship between each identified reform measure and the selected reform variables. Reform measures regarding the **judicial system** may produce **supply-side** impacts, namely those related to the reorganization of courts (*e.g.*, restructuring and reduction in the number of courts, increasing the number and the specialization of judges), improvement in the efficiency of courts (*e.g.*, adoption of information and communication technology systems) and to improvements in the efficiency of procedures regarding claims enforcement and processual backlog. They may also impact on the **demand side** of the judicial services, *i.e.*, those referring to diminishing incentives towards a litigious resolution of conflicts by courts through the implementation of out-of-court settlements. Indeed, a lower litigation rate may result from, *e.g.*, tighter eligibility criteria for accessing high-order courts or from the existence of alternative dispute resolution schemes.

In turn, reform measures regarding **education** are targeted to improve **schooling attractiveness** and **schooling quality**. While most of the reform areas are expected to impact on both targets, measures for "Improvement of lifelong learning" clearly promote **schooling attractiveness** and those related to "Management/infrastructures", "Promotion of school autonomy" and "Consolidation of the implementation of new curricula goals" are mainly aimed at improving **schooling quality**.

The calculations presented in this section refer to the highlighted/selected reform areas highlighted above, thus focusing on the assessment of the macroeconomic impact of structural reforms concerning judicial "Overall system efficiency" (*e.g.*, judicial organisation, claims enforcement, out-of-court settlement) and the "Insolvency regime", in the case of Justice; and "Development of early intervention strategies", "Promotion of school autonomy", "Introduction of vocational tracks with strengthening and upgrading of vocational training" and "Consolidation of the implementation of curricula goals", in the case of Education.

Although the implementation of several of these reform measures may have implied some direct budgetary costs – which, in turn, would have implied additional sort-run macroeconomic effects -, we assume that they have been financed by reallocating public expenditure rather than by increasing it,[9] in order to isolate the structural effects of the reforms, which is the main focus of this exercise.

It should also be noted that although the macroeconomic model features the frictions and nominal rigidities that are now common in macroeconomics - thus allowing for a business-cycle-type analysis of the effects of the reform shocks -, the short-run results must be further interpreted in the light of the transitional dynamics triggered through the (more structural) R&D-driven transmission mechanism also featured in the model.

Table 1 summarises the **transmission mechanisms** from (groups of) reforms to the macroeconomy that will be explored in the next two subsections. The table singles out, for each implemented mechanism, the corresponding **reform, sector-efficiency** and **micro variables**, as well as the selected **shock variables/parameters** in the macro model**.** For an overview, Appendix C depicts the evolution of selected reform and sector-efficiency variables in Portugal compared with other European countries.

[9]However, as the budgetary rule adopted in the model indexes the level of total government expenditure to the level of GDP, total expenditure levels are allowed to change over time.

Table 1. Transmission mechanisms and translation into shocks in the macro model (summary)

		Transmission mechanism	Reform variable	Efficiency variable / micro variable	Shock in the Macro Model
A - Reforms in Justice					
A1	System efficiency	Firms' entry cost	Court size, litigation rate, courts-to-population ratio, share of public budget for courts ICT	Disposition time / firms net entry	Firms' entry costs (calibrated)
		Allocative efficiency	Court size, litigation rate, courts-to-population ratio, share of public budget for courts ICT	Disposition time / allocative efficiency	Labour productivity (estimated)
		Financing cost – interest rate spreads	Courts-to-population ratio, judges-to-population ratio	- /Rule of law index	Interest rate risk premium on capital (estimated)
		International technology linkages - FDI inflows	Court size, litigation rate, courts-to-population ratio, share of public budget for courts ICT	Backlog ratio / FDI inflows	International technology linkages (calibrated)
A2	Insolvency regime	Entrepreneurship/self-employment	Overall index of pre-insolvency framework	- / Self-employment rate	Leisure preferences (calibrated)
		Liquidity constraint	Overall index of pre-insolvency framework	- / -	Share of liquidity constrained households (calibrated)
B - Reforms in Education					
B1	Schooling attractiveness	School attainment	Share of early school leavers	- / Skill shares	Skill shares (simulated stock-flow model)
B2	Schooling quality	School achievement	Grade retention, school autonomy, instruction time	Achievement scores / wage differentials	Human capital efficiency (calibrated)

Source: own elaboration.

4.1. Justice

4.1.1. Overall system efficiency

In this section, we simulate the impacts of the set of reform measures pertaining to the reform area "Overall system efficiency" (A1 in Table 1; see the details on the reform measures in Table B1 and on the reform variables in Table B3, Appendix B), by relying on the following transmission mechanisms in the model: (i) firms' entry cost; (ii) allocative efficiency; (iii) financing cost (interest rate spreads); and (iv) international technology linkages (FDI inflows).[10]

i) Firms' entry cost mechanism

We start by simulating the impact of the set of reform measures regarding the efficiency of the judicial system on several macroeconomic indicators through the estimated impact of the former on the firms' net entry rate.

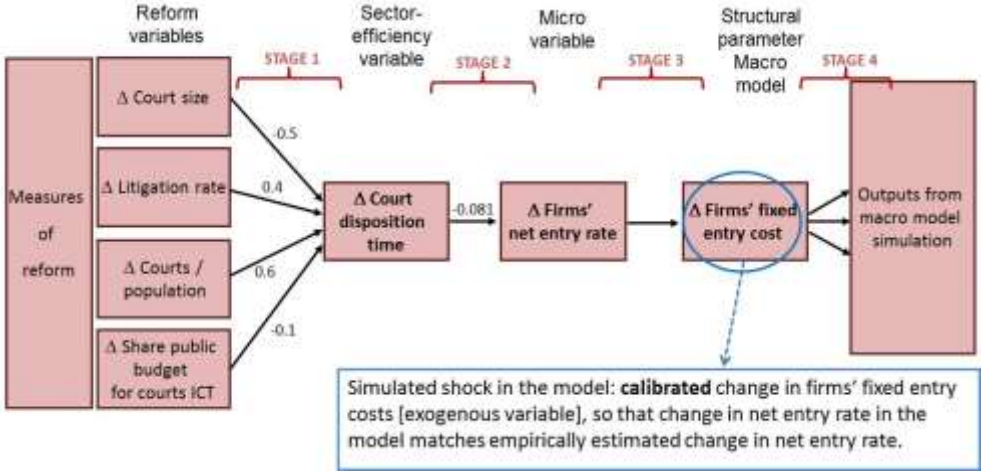
Well-functioning judiciaries guarantee security of property rights and contract enforcement that stimulates agents to enter into economic relationships, by reducing arbitrary behavior and transaction costs (OECD, 2013). We take, as reference, the estimated impact of the change in several reform variables (court size measured as judges per court, litigation rate, the number of courts over population, and the share of public budget for courts ICT) on the firms' net entry rate, as in European Commission (2014). The shock operates through the impact of reforms (assessed by changes in reform variables) on the fixed costs of intermediate-goods firms, so as to produce the estimated impact on the net entry rate. This relies on (i) assessing the estimated impacts on selected indicators of reform efficiency (sector-efficiency variables) – disposition time or backlog ratio – and ii) the impacts of the latter on the net entry rate, based on estimates from European Commission (2014, p. 48).

In the model, the firms' net entry rate is captured by the change in the number of intermediate goods (manufacturing) firms (ΔA in equation (22) in Roeger *et al.*, 2008).

Figure 2 depicts the selected transmission mechanism and the translation of the change in the reform variables into shocks in the macro model (Stages 1 to 4).

[10]The results pertaining to a larger set of macroeconomic variables and time periods are presented in Appendix D.

Figure 2. Efficiency of Justice: firms' entry cost transmission mechanism and translation into shocks in the macro model



Source: own elaboration.

Note: the numbers next to the arrows are estimated elasticities provided by European Commission (2014) and are the same as those reported in Table 2, in columns (b) and (d).

In this exercise, we assume changes in reform variables from 2010 to 2012-2015, depending on the latest year with available data. We use data from the Ministry of Justice of Portugal and from CEPEJ. Table 2 shows the details of the results pertaining to Stages 1 and 2 of Figure 1.

Table 2. STAGES 1 and 2: Changes in selected reform variables from 2010 to 2012-2015 – firms' entry cost mechanism

Reform variables	Reform variable before reform	Reform variable after reform	% change (a)	Disposition time elas-ticity (b)	**Estimated impact on disposition time (c)=(a)*(b)**	Semi-elasticity of net entry rate relative to disposition time (d)	**Estimated impact on firm net entry rate (p.p.) (c)*(d)**
(1) Judges/Court *(Min Justice data, 2010-2013, 1st instance, legal entities)*	4.140	4.217	1.848	-0.5	**-0.924**	-0.081	**0.075**
(2) Courts/population (x 1000) *(CEPEJ data, 2010-2012, all courts, geo-graphical location)*	0.032	0.030	-4.006	0.6	**-2.404**	-0.081	**0.195**
(3) Litigation rate *(Min Justice data, 2010-2015 "ações" and "execu-ções cíveis")*	4548.996	3908.684	-14.076	0.4	**-5.63**	-0.081	**0.456**
(4) Share of Public Budget for courts ICT (x 1000) *(CEPEJ 2010, avg Min Justice 2011-2014)*	0.12	0.12	0	-0.1	**0**	-0.081	**0**
Total							**0.726**

Source: own elaboration based on the estimated elasticities provided by the empirical literature (European Commission, 2014) and on the data from the Ministry of Justice (Portugal) and CEPEJ: (1) Ministry of Justice; (2) No. of courts (CEPEJ, 2014, Table 5.1, "All the courts", p. 112, and CEPEJ, 2012, Table 5.1, "All the courts", p. 98); Population (CEPEJ, 2014, Table 1.1, p. 12, and CEPEJ, 2012, Table 1.1, p. 12); (3) Ministry of Justice and INE; data for 2015 were collected from several issues of "Estatísticas trimestrais - ações e ações executivas cíveis e processos de falência" at http://www.siej.dgpj.mj.pt/; (4) Annual public budget allocated to computerization (CEPEJ, 2012, Table 2.9, p. 30); Total annual State public expenditure (CEPEJ, 2012, Table 1.1, p. 12); Ministry of Justice. (d) Elasticity is computed from the elasticities shown in European Commission (2014, Table V.4, p. 48), taking into account that [net entry rate = entry rate – exit rate] and, in turn, [exit rate = churn rate - entry rate].

Given the values reported for the reform variables, the overall impact on the net entry rate is positive and expected to be of 0.726 p.p.. This implies calibrating a change in firms' entry costs as to impact 0.00726 on the net entry rate in the model[11], which requires a change in firms' entry costs[12] of -0.026. Although this is broadly equivalent to the calibrated value for the firms' entry cost in the simulation of the QUEST model (see Varga *et al*., 2014), it yields the potential impact through this mechanism in the model. We will follow,

[11] ΔA in equation (22) of Roeger *et al.* (2008) (PT_DPAT in the dyn file, which contains the MatLab code for the European Commission's QUEST model; hereafter, we will refer to similar code names).
[12] See equation (13) of Roeger et al. (2008) (PT_FCA in the dyn file).

however, another benchmark mechanism (allocative efficiency mechanism) later in this section to simulate the impact of the same set of reform measures in the judicial system.

Table 3 depicts the results of the simulation exercise (Stage 4 of Figure 1) regarding five key macroeconomic variables (GDP, employment, real wages, public budget-to-GDP ratio and external balance-to-GDP ratio).

Table 3. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a change in fixed entry costs of - 0.026(*)

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP (p.p.)	0.042	0.019	0.014	0.013	0.013	0.008	-0.004	0.003
Employment	0.060	0.037	0.029	0.027	0.028	0.036	0.038	0.023
Real wages	0.143	0.152	0.164	0.176	0.188	0.236	0.293	0.356
GDP	-0.029	-0.024	-0.001	0.025	0.049	0.135	0.214	0.268
External balance/GDP (p.p.)	-0.003	0.007	0.011	0.011	0.009	0.001	-0.003	0.002

Source: own elaboration.

Note: 500-period simulation for convergence. (*) Calibrated change in firms fixed entry costs so that a change in firm net entry rate in the model matches the empirically estimated change in firm net entry rate (0.726 p.p.).

The reduction in fixed entry costs first impacts the intermediate-good sector (representing the manufacturing sector in the model), as it lowers the present discounted value of profits at which firms break even and thus increases entry of new firms. The ensuing increased demand for patents raises the demand for high skilled workers in the R&D activities, which target the creation of new varieties of intermediate goods. Thus, employment increases by a relatively large amount in the R&D sector. Since resources are diverted from the production sector, aggregate output falls (although only slightly) below the pre-shock steady-state level in the first two years of the simulation. After that period, aggregate output gradually increases above the previous steady state reflecting the total productivity gains induced by the expanded R&D activities. Aggregate output reaches 0.27% above the pre-shock steady-state level after 50 years, while real wages are increased by 0.36%. Aggregate employment increases only slightly, by 0.023%.

Exports also fall in the first two years, reflecting the decrease in aggregate output. However, even larger reductions in imports and the recovery of exports after the second year, reflecting the impact of productivity gains, improve the current account balance. After 50 years, the ratio of the current account to GDP is similar to the initial steady-state level.

The public budget balance ratio to GDP also increases, but only over the short-run and by a small amount, reflecting the feedback budget rules assumed in this exercise, which link the dynamics of the public budget and the ratio of public debt to GDP in order to stabilise the latter in the long run (see equation (33) in Roeger *et al.*, 2008).

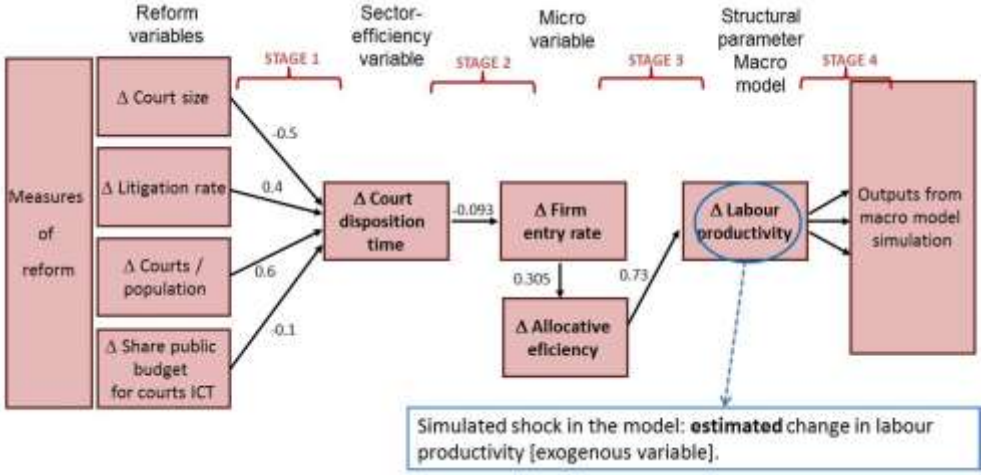
ii) Allocative efficiency mechanism

Another approach is to simulate the macroeconomic impacts of the above reform measures in the judicial system through the estimated impact of the latter on allocative efficiency and, thereby, on labour productivity.

The European Commission (2013) estimates the relationship between the entry rate of new firms and allocative efficiency and between the latter and labour productivity. This then allows us to translate changes in the reform variables in Table 2 into labour productivity shocks, through the changes in the entry rate of new firms and the changes in allocative efficiency (see Figure 3 and Table 4).

In the model, the labour productivity shock can be introduced by changing the exogenous variable corresponding to labour productivity in the final-good aggregate production function (A^{exog} ; see equation (13) in Roeger *et al.*, 2008).

Figure 3. Efficiency of Justice: allocative efficiency transmission mechanism and translation into shocks in the macro model



Source: own elaboration.

Note: the numbers next to the arrows are estimated elasticities provided by European Commission (2013, 2014) and are the same as those reported in Table 2, in columns (b) and (d), and in Table 4, in columns (b) and (d).

We again use data from the Ministry of Justice (Portugal) and CEPEJ and assume changes in reform variables from 2010 to 2012-2015, depending on the latest year with available data. Table 4 shows the details of the results pertaining to Stages 1 to 2 of Figure 3.

Table 4. STAGES 1 to 3: Changes in selected reform variables from 2010 to 2012-2015 – allocative efficiency mechanism

Reform variables	% change	**Estimated impact on firm entry rate (pp)**	Semi-elasticity of allocative efficiency relative to entry rate	**Changes in allocative efficiency (%)**	Elasticity of labour productivity relative to allocative efficiency	**Estimated impacts on labour productivity (%)**
		(a)	(b)	**(c)=(a)*(b)**	(d)	**(c)*(d)**
(1) Judges/Court (Min Justice data, 2010-2013, 1st instance, legal entities)	1.848	0.086	0.305	**0.026**	0.73	**0.019**
(2) Courts/population (x 1000) *(CEPEJ data, 2010-2012, all courts, geographical location)*	-4.006	0.224	0.305	**0.068**	0.73	**0.050**
(3) Litigation rate (Min Justice data, 2010-2015, "ações" and "execuções cíveis")	-14.076	0.524	0.305	**0.160**	0.73	**0.117**
(4) Share of Public Budget for courts ICT (x 1000) *(CEPEJ 2010, avg Min Justice 2011-2014)*	0	0	0.305	**0**	0.73	**0**
Total						**0.185**

Source: own elaboration based on data from Ministry of Justice (Portugal) and CEPEJ (see notes to Table 2) and the estimated elasticities provided by the empirical literature (European Commission, 2013, 2014).

As can be seen from Table 4, given the values reported for the reform variables, the overall impact on labour productivity is estimated to be of about 0.185%. Table 5 depicts the results of the simulation exercise (Stage 4 of Figure 3).

Table 5. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a change in labour productivity in the final-good aggregate production function of 0.185%

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP (p.p.)	-0.028	0.011	0.021	0.022	0.019	0.005	-0.005	0.002
Employment	-0.070	-0.030	-0.011	-0.004	-0.002	0.002	0.001	-0.009
Real wages	0.120	0.171	0.198	0.212	0.219	0.238	0.268	0.308
GDP	0.147	0.202	0.223	0.233	0.239	0.264	0.295	0.326
External balance/GDP (p.p.)	0.040	0.017	0.005	0.000	-0.002	-0.004	-0.003	0.001

Source: own elaboration.

Note: 500-period simulation for convergence.

The increase in the level of labour productivity through the allocative-efficiency channel impacts directly the efficiency of the final-good sector, with a short-run positive effect on aggregate output and real wages. At the same time, this shock increases the demand for intermediate goods and, thereby, stimulates entry of firms in this sector. The ensuing rising demand for patents increases the demand for high skilled R&D workers and amplifies the positive impact on aggregate output. Aggregate output reaches 0.33% above the pre-shock steady-state level after 50 years, while real wages are increased by 0.31%.

In contrast, aggregate employment starts by decreasing reflecting the fall in employment in the production sector, as the labour productivity shock raises firms' production capacity but short-run price rigidities prevent demand from increasing proportionally. However, in the medium run there is a recovery of employment reflecting the adjustment of relative prices and the continuous increase in aggregate output. Aggregate employment is almost unchanged vis-à-vis the pre-shock steady-state after 50 years.

Exports increase throughout time, reflecting the impact of productivity gains and increased aggregate output. This effect, combined with the (slight) decrease in imports, leads to a positive effect on the current account. After 50 years, the current account-to-GDP ratio is close to the initial steady-state level.

The public budget balance displays a small improvement in the medium run but stays barely unchanged after 50 years, again reflecting the assumed feedback budget rules.

iii) Financing cost mechanism (interest rate spreads)

An important dimension of an efficient judicial system is the strength of contract enforcement / property rights protection, which, in turn, is a key determinant of the firms' financing costs premia and thus of investment.

In the model, the cost of borrowing can be mimicked by the exogenous variable corresponding to the risk premium on tangible capital (*rpK*) or the parameter referring to the risk premium on intangible capital (*rpA*) (see equation (1) in Roeger *et al.*, 2008). Risk premium on intangible capital is taken to be larger than that on physical capital because, on the one hand, in case of project failure, the second has always a market resale value that is used as collateral and, on the other hand, new entrants (modelled by firms that only produce intangibles) usually face higher business risks and have no market track records when compared to established firms (Roeger *et al.*, 2008). Shocks decreasing risk premia reduce the borrowing costs and increase optimal capital of both already established firms (tangible capital) and of new firms that introduce new products (intangible capital). Thus we can identify the impacts of better property rights protection on the interest rate spread through a reduction in such capital costs.

We rely on several pieces of literature (see Box 1) to calibrate this exercise.

Box 1. Impact of reforms in Justice on the strength of property rights protection

In the literature, the privileged variable to account for the efficiency and enforcement practices of property rights by the judiciary (and other legal institutions) is the rule of law in the country as measured by an index relying on data from the International Country Risk Guide (ICRG), produced by the country-risk rating agency Political Risk Services Group. Laeven and Majnoni (2005) and Bae and Goyal (2009) use such index from La Porta *et al.* (1998) (see Table IV, p. 44, line "Rule of Law" in Bae and Goyal, 2009, and Tables 4, 6 and 7 in Laeven and Majnoni, 2005), scale 0-6. An additional variable, also used in both studies, is the Index of Economic Freedom from the Heritage Foundation (see Table VI, p. 44, line "Property Rights" in Bae and Goyal, 2009, and Tables 3, 5 and 7 in Laeven and Majnoni, 2005), scale 1-5. Bae

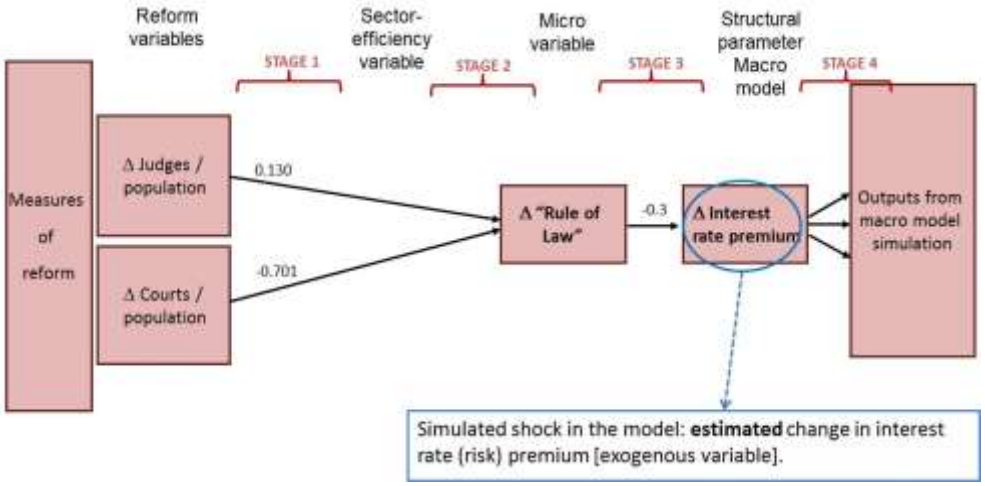
and Goyal (2009) also use the Rule of Law index by the ICRG, scale 0-10. These studies assess the impact of changes in the "rule of law" on interest rate spreads.

To the best of our knowledge, there are not, however, empirical studies relating traditional judicial reform variables with these specific "rule of law" indicators. The study by Cross and Donelson (2010) investigates how, in practice, judicial changes can be implemented to increase the quality of the legal framework as measure, among others, by the "rule of law" indicators. Using data from CEPEJ, they assess how different judicial resources, based on measures of judicial salary, overall judicial budget, number of courts, and number of judges, affect the legal quality of a country. The rule-of-law indicator is that included in the computation of Worldwide Governance Indicator of the World Bank, ranging from -2.5 (week legal environment) up to 2.5 (strong legal environment). They conclude that, for instance, a decrease in the number of courts of general jurisdiction per 100,000 inhabitants, and an increase in the number of professional judges per 100,000 inhabitants, have statistically significant positive impact on the rule of law. These results rely on a panel of 29 European countries.

Our proposed methodology is to link, in a first step, the reform measures to the alternative "rule of law" indicators and, in a second step, the "rule of law" to the interest rate spread. Since the "rule of law" in Cross and Donelson (2010) is taken from the World Bank, we take the average value of the corresponding sample (0.72, p. 500) and make a proportional correspondence to the different "rule of law" measures used in second step studies. Coefficients on reform variables were then transformed as to deliver equivalent effects on (average) alternative "rule of law" measures.

Figure 4 depicts the selected transmission mechanism and the translation of the change in the reform variables into shocks in the macro model (Stages 1 to 4).

Figure 4. Efficiency of Justice: financing cost transmission mechanism and translation into shocks in the macro model



Source: own elaboration.

Note: the numbers above the arrows are estimated coefficients provided by the empirical literature (Cross and Donelson, 2010 – stage 1 coefficients; Laeven and Majnoni, 2005 and Bae and Goyal, 2009, for stage 3 coefficient). The coefficients in Stage 1 are used to compute the values in the 7th column of Table 6a. The coefficient in Stage 3 is reported in Table 6b, in the 4th column.

We assume changes in reform variables from 2010 to 2012-2013, depending on the latest year with available data. We use data from the Ministry of Justice of Portugal, INE (Portugal), and CEPEJ. Tables 6a and 6b give the details on the results pertaining to Stages 1 to 3 of Figure 4, using alternative estimates from the empirical literature.

Table 6a. STAGE 1: Changes in selected reform variables from 2010 to 2012-2013 – financing cost mechanism

Reform variables	Reform variable before reform	Reform variable after reform	Change	Estimated Impact on ROL (ICRG)	Estimated Impact on ROL (LLSV)	Estimated Impact on Economic Freedom
(1) Courts/population*100 000 (*CEPEJ data, 2010-2012*)	3.159	3.032	-0.127	0.160	0.096	0.089
(2) Judges/population*100 000 (*Min Justice data, 2010-2013*)	16.808	17.226	0.417	0.098	0.059	0.054

Table 6b. STAGES 2 and 3: Changes in selected reform variables from 2010 to 2012-2013 – financing cost mechanism

Reform variables	Change in spread (pp) from unit change in ROL (ICRG)	Change in spread (pp) from unit change in ROL (LLSV)	Change in spread (pp) from unit change in Economic Freedom	Estimated Impact on spread (ICRG), p.p.	Estimated Impact on spread (LLSV), p.p.	Estimated Impact on spread (Economic Freedom), p.p.
(1) Courts/population *100 000 (*CEPEJ data, 2010-2012*)	-8.7	-17.9	-0.3	-1.393	-1.720	-0.02
(2) Judges/population*100 000 (*Min Justice data, 2010-2013*)	-8.7	-17.9	-0.3	-0.850	-1.049	-0.016
Total				**-2.243**	**-2.769**	**-0.043**

Source: own elaboration based on the estimated coefficients provided by the empirical literature (Cross and Donelson, 2010; Laeven and Majnoni, 2005; Bae and Goyal, 2009) and on the data from Ministry of Justice, INE (Portugal) and CEPEJ: (1) Gross salary 1st instance professional judge (CEPEJ, 2014, Table 11.4.1, p. 301, and CEPEJ, 2012, Table 11.4.1, p. 262); (2) No. of courts (CEPEJ, 2014, Table 5.1, "All the courts", p. 112, and CEPEJ, 2012, Table 5.1, "All the courts", p. 98); Population (CEPEJ, 2014, Table 1.1, p. 12, and CEPEJ, 2012, Table 1.1, p. 12).

The impact of reform measures on the interest rate spread is estimated to be bounded between -2.77 and -0.043 p.p.. We selected the less ambitious scenario, as argued by Roeger *et al.* (2008) referring to Hardouvelis *et al.* (2004) that, from the 1990s onwards, risk premium already fell by 1.5 p.p.. Moreover, according to London Economics (2002), financial market integration in the European Union could reduce capital costs by about 0.5 p.p.. Thus, a more effective justice system is not expected to entail large changes in spreads.

For this simulation, we apply a shock on the risk premia on intangible capital (*rpA*; equation (1) in Roeger *et al*., 2008) of -0.043 p.p.. The initial value for this risk premia is calibrated to 3.286%. Table 7a summarises the results of the simulation exercise (Stage 4 of Figure 4).

Table 7a. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a change in the risk premia on intangible capital of -0.043 p.p.

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP (p.p.)	0.000	-0.004	-0.004	-0.004	-0.003	0.000	0.002	0.000
Employment	0.011	0.005	0.003	0.001	0.001	-0.001	-0.002	-0.001
Real wages	0.026	0.028	0.030	0.033	0.035	0.044	0.053	0.062
GDP	-0.005	-0.005	-0.002	0.002	0.006	0.018	0.030	0.041
External balance/GDP (p.p.)	-0.002	0.000	0.001	0.001	0.001	0.001	0.000	0.000

Source: own elaboration.

Note: 500-period simulation for convergence.

The reduction in the risk premia on intangible capital (the technological knowledge stock built up through R&D activities) amounts to improving access to credit for potential entrants in the market (start-ups). This lowers the threshold at which projects break even by increasing the respective present discounted value of profits and thereby stimulates entry of new firms and the introduction of new products.

Overall, the effects of this shock are qualitatively similar to those arising from a reduction in fixed entry costs in the intermediate-good sector. The magnitudes of the effects are much smaller, however, also reflecting the distinct size of the shock. After 50 years, the level of aggregate output is increased by 0.04% and of real wages by 0.06%, while no noticeable effect is expected on employment (it is barely unchanged in the long run, after some small increase in the short run).

Exports slightly increase throughout time, reflecting the impact of productivity gains and increased aggregate output. After 50 years, however, the current account-to-GDP ratio is at the initial steady-state level.

This shock could also be implemented on the risk premia on tangible capital (*rpK*; equation (1) in Roeger *et al*., 2008). Risk premia on tangible capital is calibrated at 0.927% and, as in the case of *rpA*, we shock it by -0.043 p.p. Results are shown in Table 7b below.

Table 7b. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a change in the risk premia on tangible capital of -0.043 p.p.

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP (p.p.)	-0.038	-0.019	-0.007	-0.003	-0.001	0.009	0.018	0.009
Employment	0.045	0.099	0.125	0.132	0.130	0.111	0.085	0.053
Real wages	-0.027	0.011	0.068	0.127	0.186	0.451	0.839	1.334
GDP	0.051	0.150	0.231	0.299	0.361	0.634	1.026	1.527
External balance/GDP (p.p.)	0.015	-0.015	-0.036	-0.045	-0.046	-0.032	-0.010	0.015

Source: own elaboration.

Note: 500-period simulation for convergence.

The reduction in the risk premia on tangible capital entails larger effects than those accruing in the case of intangible capital. As a first effect, the reduction in physical capital costs induces higher demand for physical capital and increases investment by a significant amount. This, in turn, stimulates market entry in the intermediate-good sector, patent creation and the demand for high skilled workers in the R&D sector. However, since higher physical capital also increases labour productivity in production activities, total employment increases (although by a small amount) in both the R&D sector and the production sector.

Over time, aggregate output and real wages gradually increase above the pre-shock steady state level reflecting the higher physical capital stock and, as a smaller effect, the productivity gains from R&D activities. After 50 years, the level of aggregate output is increased by 1.53% and of real wages by 1.33%. Aggregate employment increases only slightly (0.05% above the previous steady state).

Exports increase throughout time, reflecting the impact of productivity gains and increased aggregate output, while imports remain roughly unchanged. After 50 years, the current account-to-GDP ratio rises by about 0.015 p.p. above the initial steady-state level.

iv) International technology linkages mechanism (FDI inflows)

The efficiency of the judicial system is often singled out as a determinant of foreign investment. This can be a mechanism worth analyzing on its own, as long as FDI brings about specific benefits in addition to domestic investment.

European Commission (2014) finds a negative relationship between the backlog ratio and the net FDI inflows as a percentage of GDP. They also provide elasticities of this sector-efficiency reform variable to several justice reform variables (*e.g.*, average number of judges or the litigation rate). In turn, FDI is expected to induce macroeconomic impacts (see Box 2).

Box 2. Macroeconomic impact of FDI

FDI is expected to have positive macroeconomic impacts through two main channels: capital accumulation (*e.g.*, Alguacil *et al.* 2008, Bosworth and Collins, 1999) or international technology spillovers, amplifying the existing level of knowledge through labor training, skill acquisition, and the introduction of alternative management practices and technologies (see Blomström and Kokko, 1998). However, empirical evidence is rather mixed on the effects of FDI on growth: some studies find a positive relation but depending on the destiny country-specific situation (*e.g.*, Borensztein *et al.*, 1998, Alfaro *et al.*, 2009), on the FDI inflows origin country and on the type of FDI (*e.g.*, Driffield and Love, 2007). Some other studies, and, in particular, under some model specifications, find no statistically significant relationship.

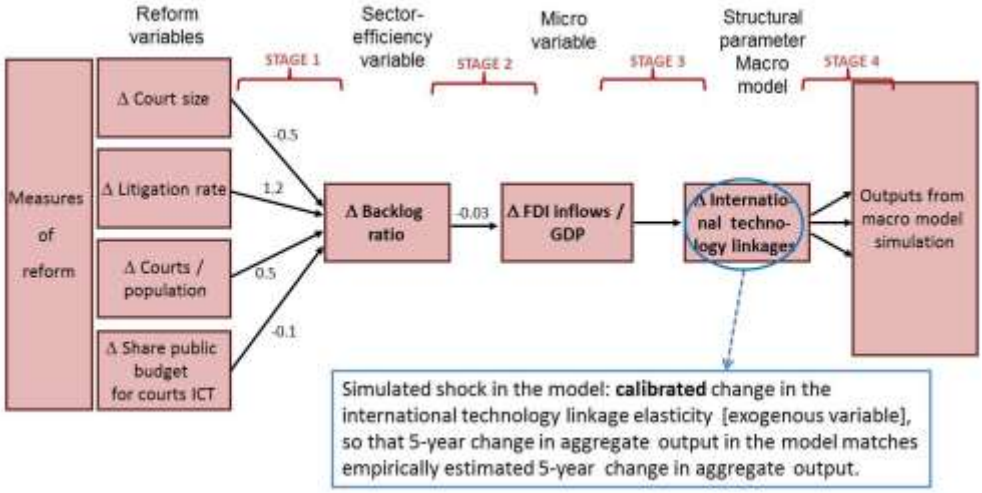
Using a sample of developing countries and data from 1976-2005 (5-year period per time observation), Alguacil *et al.* (2011) find mixed evidence on the effects of FDI on GDP *per capita* growth: a 1 p.p. change in FDI/GDP is estimated to produce impacts on 5-year average growth of GDP *per capita*, either non-significant or positive (in the positive case, with a lower-bound of 0.3 p.p. and an upper-bound of 0.44 p.p).

In the context of the macro model, the international technology spillovers shock can be introduced by impacting the elasticity of the international stock of knowledge in the R&D production function, since this elasticity captures the spillover effects from that stock of knowledge to domestic R&D activities, i.e., the international technology linkages (parameter ϖ, equation (22) of Roeger *et al.*, 2008). We link FDI to that shock by calibrating this elasticity such that the resulting 5-year average growth matches the one from the empirical estimations of Alguacil *et al.* (2011) described in the above Box.

Figure 5 depicts the selected transmission mechanism and the translation of the change in the reform variables into shocks in the macro model (Stages 1 to 4).

As before, we took data from the Ministry of Justice of Portugal and CEPEJ and assume changes in reform variables from 2010 to 2012-2015, depending on the latest year with available data. Tables 8a and 8b show the details of the results pertaining to Stages 1 to 3 of Figure 5.

Figure 5. Efficiency of Justice: international technology linkages transmission mechanism and translation into shocks in the macro model



Source: own elaboration.

Note: the numbers next to the arrows are estimated elasticities provided by European Commission (2014) and are also reported in Table 8a, column (b), and in Table 8b, column (b).

Table 8a. STAGE 1: Changes in selected reform variables from 2010 to 2012-2015 – international technology linkages mechanism

Reform variables	Reform variable before reform	Reform variable after reform	% change (a)	Backlog ratio elasticity (b)	**Estimated impact on backlog ratio (c)=(a)*(b)**
(1) Judges/Court *(Min Justice data, 2010-2013, 1st instance, legal entities)*	4.140	4.217	1.848	-0.5	**-0.924**
(2) Courts/population (x 1000) *(CEPEJ data, 2010-2012, all courts, geographical location)*	0.032	0.030	-4.006	0.5	**-2.00**
(3) Litigation rate *(Min Justice data, 2010-2015, "ações" and "execuções cíveis")*	4548.996	3908.684	-14.076	1.2	**-16.891**
(4) Share of Public Budget for courts ICT (x 1000) *(CEPEJ 2010, avg Min Justice 2012-2014)*	0.12	0.12	0	-0.1	**0**
Total					**-19.818**

Source: own elaboration based on data from Ministry of Justice (Portugal) and CEPEJ (see notes to Table 2). (b) European Commission (2014), Table V.3, p. 48.

Table 8b. STAGES 2 and 3: Changes in selected reform variables from 2010 to 2012-2015 – international technology linkages mechanism

Reform variables	Estimated change in Backlog ratio (a)	Estimated change in Net FDI inflows/GDP per 100 cases change in backlog (p.p) (b)	Estimated change in Net FDI/GDP (p.p) (c)=(a)*(b)	Lower-bound positive estimated impact on 5-year average growth rate per 1 p.p in FDI/GDP (p.p) (d)	Estimated impact on 5-year average growth rate (%) (c)*(d)
(1)+(2)+(3)+(4) (as described in Table 8a)	-682.17	-0.03	0.205	0.3	0.061

Source: own elaboration based on the estimated elasticities of FDI to backlog ratio (b) and output growth to FDI (d) provided by the empirical literature (European Commission, 2014, Table V.4, p. 48, and Alguacil et al., 2011, Table 1, p. 489, respectively). (a) Estimated change based on pre-reform backlog ratio 2010 (European Commission, 2014, Table V.5, p. 48) and on the estimated growth rate (Table 8a, column (c) - Total): 3442.1*(-0.19818) = - 682.17.

Using the lower-bound (positive) estimates from Aguacil *et al.* (2011), the expected impact on output growth is 0.061% as a 5-year average. In order to capture the impact on FDI in the model, we calibrate the elasticity that measures the spillover effects from the international stock of knowledge (*i.e.*, the international technology linkages elasticity,[13] such that the resulting 5-year growth effect matches 0.3%, *i.e.,* 0.061% average *per* year. This requires increasing the elasticity from 0.6509 to 0.668. Table 9 summarises the results of the simulation exercise (Stage 4 of Figure 5).

Table 9. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a change in the international technology linkages elasticity of 0.0171(*)

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP (p.p.)	0.016	0.001	0.004	0.009	0.014	0.018	0.004	0.006
Employment	0.040	0.008	-0.002	-0.004	-0.003	0.000	-0.003	-0.026
Real wages	0.185	0.231	0.275	0.317	0.354	0.494	0.650	0.824
GDP	0.025	0.088	0.164	0.234	0.297	0.515	0.718	0.887
External balance/GDP (p.p.)	0.011	0.024	0.026	0.023	0.018	0.001	-0.005	0.003

Source: own elaboration.

Note: 500-period simulation for convergence. (*) Calibrated change in the international technology linkage elasticity so that a 5-year change in aggregate output in the model matches the empirically estimated 5-year change in aggregate output (0.3%).

The increase in the international technology spillovers elasticity amounts to improving the productivity of (domestic) R&D activities. Similar to the case of a downward shock on the risk premia on intangible capital (financing cost transmission mechanism), this implies a lower threshold at which projects break even by increasing the respective present discounted value of profits and thereby stimulates entry of new firms and the introduction of new products.

Overall, the effects of this shock are also qualitatively similar to those arising from a reduction in fixed entry costs in the intermediate-good sector. The magnitudes of the effects are only somewhat smaller, mainly reflecting the distinct size of the shocks. After 50 years, the level of output is increased by about 0.89% and of real wages by 0.82% vis-à-vis the pre-shock steady state level, while the reallocation of labour between the production sector and the R&D sector over time ends up implying almost no change in aggregate employment.

However, differently from the transmission mechanisms explored above, in this case there is also a permanent growth effect, since the reform shock impinges on the structure of the R&D production function. This effect amounts to an increase of 0.029 p.p. in the long-run growth rate of GDP.[14]

4.1.2. Insolvency regime

In this section, we compute the impacts of the set of reform measures pertaining to the reform area "Insolvency regime" (A2 in Table 1; see the details on the reform measures in Table B1 and on the reform variables in Table B3, Appendix B), by relying on the following transmission mechanisms in the model: (i) incentives to entrepreneurship/self-employment and (ii) relaxation of liquidity constraints.

[13] Parameter ϖ, equation (22) of Roeger *et al*, (2008) (PT_PSI in the dyn file).
[14] From equation (22) in Roeger *et al.* (2008), we have $(1+gA) = [(1+gA^*)^{PSI} \cdot (1+gLRD)^{lambda}]^{1/(1-PHI)}$. Steady state *gA* moves from 1.15% to 1.179% when *PSI* changes from 0.6509 to 0.668.

i) Entrepreneurship/self-employment mechanism

Box 3 provides a summary of a study that addresses the impacts of improvements in the pre-insolvency framework on entrepreneurship. We rely on it in order to calibrate the shock in our exercise.

Box 3. Impact of improvements in the pre-insolvency framework on self-employment

Carpus Carcea *et al.* (2015) focus on the pre-insolvency framework, as a crucial component of the insolvency regime. They propose composite indices to analyse the efficiency of national pre-insolvency frameworks alongside four dimensions: "Easiness/availability" (availability of early restructuring possibilities, the conditions for initiating the procedure, and the existence of alternative preventive procedures); "Facilitations to continuation of operations" (absence of short-term constraints on operations during a pre-insolvency procedure, such as the debtor remaining in possession of the assets and the possibility of stay of enforcement actions by individual creditors); "Direct and indirect costs" (financing flexibility or administrative as well as reputational costs) and "Debt restructuring" (increasing the probability of debt restructuring to sustainable levels).

Considering self-employment rate as a good proxy for entrepreneurship (following, among others, Armour and Cumming, 2008), Carpus Carcea *et al.* (2015) test the hypothesis that more efficient pre-insolvency frameworks tend to stimulate entrepreneurship. They regress the (log) self-employment rate along the four relevant dimension indices as well as the overall efficiency measure for insolvency procedures, using panel annual data covering 2003 to 2010 and 24 EU countries.

According to the results presented in Carpus Carcea *et al.* (2015, Table 1), a one p.p. change in the overall efficiency of the national rescue and recovery systems will statistically significantly increase the self-employment rate by 0.747% (see Table 10, below).

Table 10. Pre- and post-reform indices by dimension and overall efficiency of pre-insolvency framework in Portugal

	Easiness / availability	Facilitations to continuation of operations	Direct and indirect costs	Debt restruc-turing	Overall efficiency
Pre-reform, 2010	0.15	0.21	0.24	0.14	0.74
Post-reform, 2012	0.23	0.21	0.24	0.14	0.82
Semi-elasticity of self-employment rate	0.411	3.148***	1.592*	-1.625	0.747*

Source: Carpus Carcea *et al.* (2015) – indices, p. 10; semi-elasticities, p. 13. Note: *10%, **5% and ***1% significance levels.

Portugal has evolved positively mainly on the "Easiness/availability" dimension (see Carpus Carcea *et al.*, 2015; p. 10). Although this dimension is, by itself, not statistically significant, it contributes positively to the index of framework's overall efficiency index, on which we rely to draw the semi-elasticity of self- employment rate.

The self-employment rate (over employment) in Portugal was 21.5% in 2011.[15] For the following simulation, we make two assumptions:

i) First, an increase in the self-employment rate fully reflects on the total employment rate. The underlying assumption is that a better pre-insolvency framework would increase employed labor force that, otherwise, would be either unemployed or out of the labor force.

ii) Second, the increase in the employment rate is produced across all skill types (L, M and H).

We also rely on Carpus Carcea *et al*.'s (2015) statement that most of the changes in the index for Portugal operated in 2012.

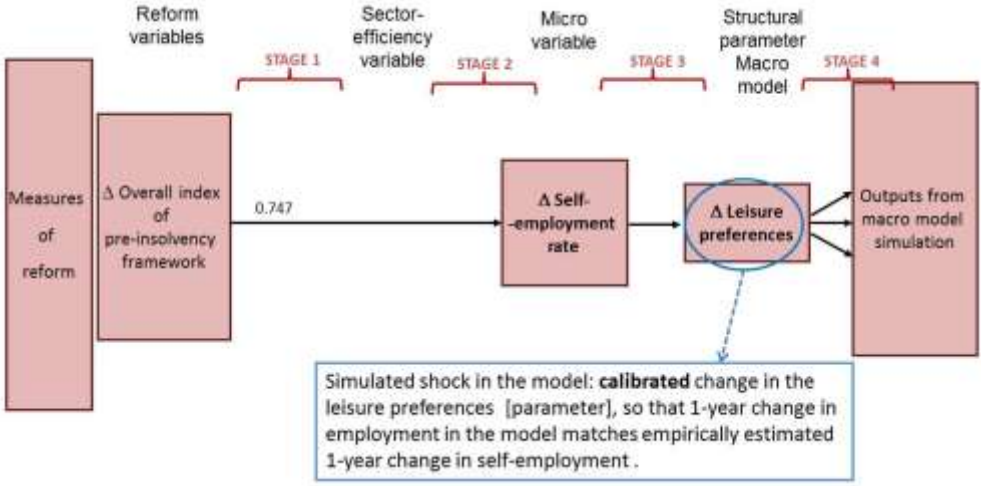
In the context of the macro model, by considering that the individuals perceive a more efficient pre-insolvency framework as a regime change in the economy that incentivizes labour supply, we mimic the employment effects on the three skill types through producing a downward shock on leisure[16] by 0.14, as to achieve an increase in aggregate employment of 1.3% (0.009 units) in the year of the shock (see Table 11, below).

Figure 6 depicts the selected transmission mechanism and the translation of the change in the reform variables into shocks in the macro model (Stages 1 to 4). Table 11 shows the details of the results corresponding to Stages 1 and 2 of Figure 6, while Table 12 depicts the results of the simulation exercise (Stage 4 of Figure 6).

Figure 6. Insolvency regime: entrepreneurship transmission mechanism and translation into shocks in the

[15] The data is from the World Bank database, at http://data.worldbank.org/indicator/SL.EMP.SELF.ZS.
[16] See equation (2b) in Roeger *et al.* (2008) (PT_EPS_LL, PT_EPS_LM, and PT_EPS_LH in the dyn file).

macro model



Source: own elaboration.

Note: the numbers next to the arrows are estimated elasticities provided by Carpus Carcea et al. (2015) and are also reported in Table 11, column (b).

Table 11. STAGES 1 and 2: Changes in selected reform variables from 2010 to 2012 – entrepreneurship/self-employment mechanism

Reform Variables				Self-employment rate semi-elasticity	Estimated impact on self-employment rate (%)	Estimated self-employment rate
Description	Value before reform (2010)	Value after reform (2012)	Change in p.p. (a)	(b)	(c)=(a)*(b)	
Overall index of pre-insolvency framework (Carpus Carcea *et al.*, 2015)	0.74	0.82	8	0.747	6%	21.5% *1.06 = 22.8% (1.3 pp change)

Source: own elaboration based on data from Carpus Carcea et al. (2015).

Table 12. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a change in the leisure preferences of -0.14 (*)

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP (p.p.)	0.165	0.602	0.822	0.861	0.802	0.285	-0.221	0.067
Employment	1.327	2.484	3.197	3.577	3.771	4.109	4.234	3.890
Real wages	-2.002	-2.189	-1.977	-1.770	-1.633	-1.365	-0.953	-0.330
GDP	0.797	1.685	2.254	2.586	2.795	3.418	4.057	4.346
External balance/GDP (p.p.)	0.448	0.405	0.260	0.145	0.070	-0.068	-0.099	0.029

Source: own elaboration.

Note: 500-period simulation for convergence. (*) Calibrated change leisure preferences so that a 1-year change in aggregate employment in the model matches the empirically estimated 1-year change in self-employment (1.3%).

The shock in the labour supply across all types of skills increases aggregate employment and output. This short-run effect is then amplified over the medium and long run reflecting the endogenous adjustment of R&D activities. The decrease in real wages induced by the relative abundance of labour (which also affects the high-skilled labour) lowers the present discounted value of profits at which intermediate-good firms break even through a patent-price effect. This increases entry of new firms and, thus, the demand for patents and for high skilled workers in the R&D activities targeting the creation of new varieties of intermediate goods. Total productivity gains, induced by the expanded R&D activities, then further increase aggregate output and employment, while real wages recover towards the pre-shock level. Aggregate output and employment rise, respectively, 4.35% and 3.89% above the pre-shock steady-state level after 50 years, while real wages remain at 0.33% below the pre-shock steady-state.

Exports also increase throughout the adjustment, reflecting the increase in aggregate output and total productivity gains, whereas imports first decrease and then gradually recover towards their pre-shock level. After 50 years, the ratio of the current account to GDP is increased by 0.029 p.p. vis-à-vis the initial steady-state level.

The ratio of the public budget balance to GDP also increases significantly in the short and medium run, rising 0.8 p.p. above the pre-shock steady-state level after 5 years. However, the change in this ratio turns out to be very small in the long run, reflecting the feedback budget rules assumed in this exercise, which link the dynamics of the public budget to the stabilisation of the ratio of public debt to GDP over the long run.

ii) Liquidity constraint mechanism

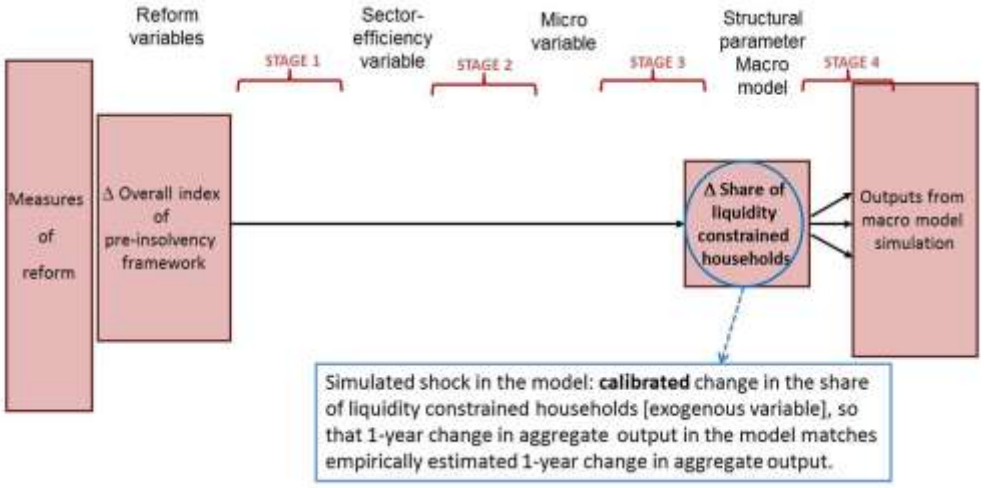
We now turn to the second mechanism elected to assess the impacts of efficiency in pre-insolvency frameworks, relying on the impact of deleveraging on overall economic activity.

In the context of the macro model, we let the leverage mechanism operate through the share of liquidity constrained households[17], in the sense that credibly increasing the efficiency of rescue and recovery frameworks reduces deleveraging costs which, in turn, can be perceived as a regime change, thereby structurally relaxing liquidity constraints. Thus, we propose to mimic this relaxation through a smaller share of the liquidity constrained households.

To assess whether early restructuring possibilities recently affected the macroeconomic outcomes of corporate deleveraging, Carpus Carcea *et al.* (2015) regress GDP growth on previous year's GDP growth and on the change in the stock of outstanding corporate debt divided by the stock of previous periods' total financial assets, for a panel of EU countries and for the period comprised between 2007-2012. Considering their results[18], a reduction in 1 p.p. in the ratio of corporate debt to financial assets will negatively impact by 0.379 p.p. the real GDP *per capita* growth rate of the following year. Moreover, if the country engages in reforms to improve overall efficiency in pre-insolvency frameworks as to move from the middle to the upper tercile of the EU28, this will produce net average impacts of 0.147 p.p. on the real GDP *per capita* growth rate of the following year, per percentage point reduction in the leverage ratio. Portugal is placed on the 3rd tercile according to data in Carpus Carcea *et al.* (2015; p. 8). But the move from the 2nd to the 3rd tercile is estimated to have increased output growth by 0.147 p.p. in the current year. We thus shock the share of liquidity constrained households in such a way as to produce an impact of 0.00147 in the first year in aggregate output and then assess the short and long-run adjustments produced on the macroeconomic variables. The shock on the share of liquidity constrained households is required to be of -0.105.

Figure 7 illustrates the selected transmission mechanism and the translation of the change in the reform variable into a shock in the macro model (Stages 1 to 4). Table 13 summarises the results of the simulation exercise.

Figure 7. Insolvency regime: liquidity constraint transmission mechanism and translation into shocks in the macro model



Source: own elaboration.

Table 13. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a change in the share of liquidity constrained households of -0.105 (*)

[17] See equation (10) in Roeger *et al.* (2008) (PT_SLC in the dyn file).
[18] See Table 3.5, rows 2-4, in Carpus Carcea *et al.* (2015).

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP (p.p.)	2.511	2.157	1.941	1.713	1.468	0.327	-0.620	0.131
Employment	0.251	0.346	0.626	0.909	1.156	1.949	2.167	1.435
Real wages	-0.205	-0.285	-0.369	-0.431	-0.483	-0.618	-0.365	0.103
GDP	0.150	0.204	0.456	0.698	0.912	1.703	2.254	1.874
External balance/GDP (p.p.)	0.036	0.275	0.247	0.178	0.114	-0.090	-0.143	0.044

Source: own elaboration.

Note: 500-period simulation for convergence. (*) Calibrated change the share of liquidity constrained households so that a 1-year change in aggregate output in the model matches the empirically estimated 1-year change in aggregate output (0.00147).

In the model, liquidity constrained households consume their disposable income each period and offer labour inelastically. A reduction in the share of this type of households in the economy produces overall qualitatively similar effects to those arising from a downward shock on leisure preferences by increasing the labour supply and, thereby, increasing aggregate employment and output. The decrease in real wages induced by the relative abundance of labour induces an endogenous adjustment of R&D activities through a favourable patent-price effect, which then amplifies the impact on employment and output in the medium and long run. Aggregate output and employment rise, respectively, 1.87% and 1.44% above the pre-shock steady-state level after 50 years, while real wages are only slightly increased (by 0.1%).

Exports build up over time, reflecting the increase in aggregate output and total productivity gains, whereas imports first decrease and then gradually recover towards their pre-shock level. After 50 years, the current account-to-GDP ratio is increased by 0.044 p.p. vis-à-vis the initial steady-state level.

The ratio of public budget balance to GDP increases significantly in the short run, rising 2.2 p.p. above the pre-shock steady-state on annual average over the first 3 years after the shock. This reflects the impact of the increased share of liquidity unconstrained households on tax revenue. The change in the public budget balance ratio turns out to be very small in the long run, reflecting the already mentioned feedback budget rules assumed in this exercise.

4.1.3. Summary of results – Justice

The results concerning Justice are summarised below in Table 14, organised by areas of reform and transmission mechanisms; it presents the macroeconomic impacts of the reforms in Justice that result from the evolution of the quantified reform variables, in general over the period 2010-2015 (in some cases the periods covered are different, as referred throughout this section). Appendix E presents a slightly different way of looking at the same results: it summarises the long-run (50-year horizon) aggregate output effects of a 1% change/improvement in each reform variable, across transmission mechanisms.

The results show that the considered reforms have sizeable and positive potential macroeconomic impacts in the medium-to-long-run, although dependent on the transmission mechanism. This dependence on the transmission mechanisms provides a range of values for those impacts.

Considering first the reforms that have improved the overall system efficiency, the long-run (50 years) impacts on annual GDP range from a 0.268% (0.135% in the medium-run – 10 years) increase through the firms' entry cost mechanism to a 1.568% (0.652% already in the medium-run) increase through the risk premium channel. However, the strongest effects come from (credible and structural) improvements in the insolvency regime (accounting for both entrepreneurship and liquidity constraint mechanisms) potentially increasing annual GDP by about 5.1% in 10 years and 6.2% in 50 years.

Table 14. Summary of the macroeconomic impacts of reforms in Justice

Transmission mechanism / modelisation				Impacts on selected macro variables				
A - Reforms in Justice								
A1	Overall system efficiency	Firms' entry cost Given the values reported for the reform variables, the overall impact on the net entry rate is expected to be of 0.726 p.p.. This implies calibrating a change in firms' entry costs as to impact 0.00726 on the net entry rate in the model, which requires a change in firms' entry costs of -0.026.		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	0,042	0,013	0,008	-0,004	0,003
			Employment	0,060	0,028	0,036	0,038	0,023
			Real wages	0,143	0,188	0,236	0,293	0,356
			GDP	-0,029	0,049	0,135	0,214	0,268
			External balance/GDP	-0,003	0,009	0,001	-0,003	0,002
		Allocative efficiency Given the values reported for the reform variables, the overall impact on labour productivity (final-good sector) is estimated to be of about 0.185%.		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	-0,028	0,019	0,005	-0,005	0,002
			Employment	-0,070	-0,002	0,002	0,001	-0,009
			Real wages	0,120	0,219	0,238	0,268	0,308
			GDP	0,147	0,239	0,264	0,295	0,326
			External balance/GDP	0,040	-0,002	-0,004	-0,003	0,001
		Risk premium - intangibles The impact of reform measures on the interest rate spread is estimated to be of -0.043 (lower boundary), by considering that, from the 1990s onwards, risk premium already fell by 1.5 p.p. and also financial market integration in the EU could reduce capital costs by about 0.5 p.p..		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	0,000	-0,003	0,000	0,002	0,000
			Employment	0,011	0,001	-0,001	-0,002	-0,001
			Real wages	0,026	0,035	0,044	0,053	0,062
			GDP	-0,005	0,006	0,018	0,030	0,041
			External balance/GDP	-0,002	0,001	0,001	0,000	0,000
		Risk premium - tangibles The impact of reform measures on the interest rate spread is estimated to be of -0.043 (lower boundary), by considering that, from the 1990s onwards, risk premium already fell by 1.5 p.p. and also financial market integration in the EU could reduce capital costs by about 0.5 p.p..		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	-0,038	-0,001	0,009	0,018	0,009
			Employment	0,045	0,130	0,111	0,085	0,053
			Real wages	-0,027	0,186	0,451	0,839	1,334
			GDP	0,051	0,361	0,634	1,026	1,527
			External balance/GDP	0,015	-0,046	-0,032	-0,010	0,015
		International technology linkages - FDI inflows Given the values reported for the reform variables, the estimated cumulative impact on output growth is 0.1% in a 5 year-horizon (lower boundary). In order to capture the impact on FDI in the model, we calibrate a change in the elasticity that measures the spillover effects from the international stock of knowledge of 0.0171 to produce that cumulative change in output.		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	0,016	0,014	0,018	0,004	0,006
			Employment	0,040	-0,003	0,000	-0,003	-0,026
			Real wages	0,185	0,354	0,494	0,650	0,824
			GDP	0,025	0,297	0,515	0,718	0,887
			External balance/GDP	0,011	0,018	0,001	-0,005	0,003
A2	Insolvency regime	Entrepreneurship/self-employment Given the values reported for the reform variable, the estimated 1-year impact on employment (through self-employment) is of 1.3%. In order to capture the employment effect in the model, we calibrate a change in the leisure preferences of -0.14.		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	0,165	0,802	0,285	-0,221	0,067
			Employment	1,327	3,771	4,109	4,234	3,890
			Real wages	-2,002	-1,633	-1,365	-0,953	-0,330
			GDP	0,797	2,795	3,418	4,057	4,346
			External balance/GDP	0,448	0,070	-0,068	-0,099	0,029
		Liquidity constraint Given the values reported for the reform variable, the estimated impact on aggregate output growth is of 0.147 p.p. in the current year. In order to capture the aggregate output effect in the model, we calibrate a change in the share of liquidity constrained households of -0.105.		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	2,511	1,468	0,327	-0,620	0,131
			Employment	0,251	1,156	1,949	2,167	1,435
			Real wages	-0,205	-0,483	-0,618	-0,365	0,103
			GDP	0,150	0,912	1,703	2,254	1,874
			External balance/GDP	0,036	0,114	-0,090	-0,143	0,044

Source: own elaboration. Note: Employment, real wages and GDP -- % change from initial steady state; public budget/GDP and external balance/GDP -- p.p. change from initial steady state. The impacts result from changes in reform variables between 2010 and 2012-2015, depending on the latest year with available data.

4.2. Education

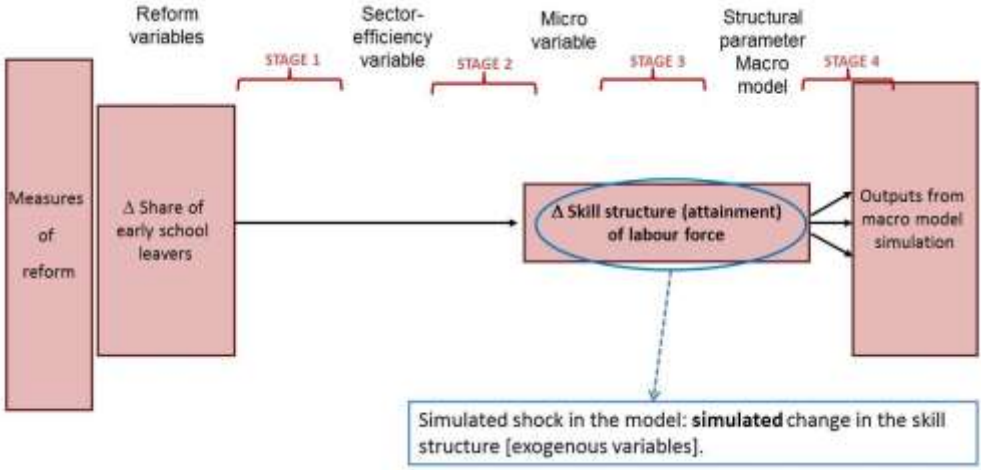
4.2.1. Schooling attractiveness – school attainment mechanism

In this section, we simulate the impacts of the set of reform measures pertaining to the reform areas "Development of early intervention strategies" and "Introduction of vocational tracks with strengthening and upgrading of vocational training" (B1 in Table 1; see the details on the reform measures in Table B2 and on the reform variables in Table B3, Appendix B), by relying on the school attainment transmission mechanism in the model.

In the context of the transmission mechanism of reforms in Education through school attainment, a key sector-efficiency variable is the share of early school leavers. However, given the lack of empirical studies on the quantitative relationship between reform variables in Education and the share of early school leavers and bearing in mind that this variable appears frequently as a direct educational policy target (see, *e.g.*, De Witte *et al.*, 2013), we conduct our evaluation exercise by considering the latter as a proxy reform variable (see Figure 8, STAGE 1).

Then, as usual in the literature (e.g., Roeger *et al.*, 2008, and Varga *et al.*, 2014), we shock the exogenous variables representing the skill structure of the labour force in the model, s_L, s_M and s_H (see equation (14) in Roeger *et al.*, 2008), in order to capture the reform shock in Education (STAGE 3).

Figure 8. Education: school attainment transmission mechanism and translation into shocks in the macro model



Source: own elaboration.

Following the approach just described, we first compute the evolution of the share of early school leavers from the data (based on INE and Ministério da Educação data). Between 2011 and 2015, this rate decreased 40.4% (from 23% to 13.7%).

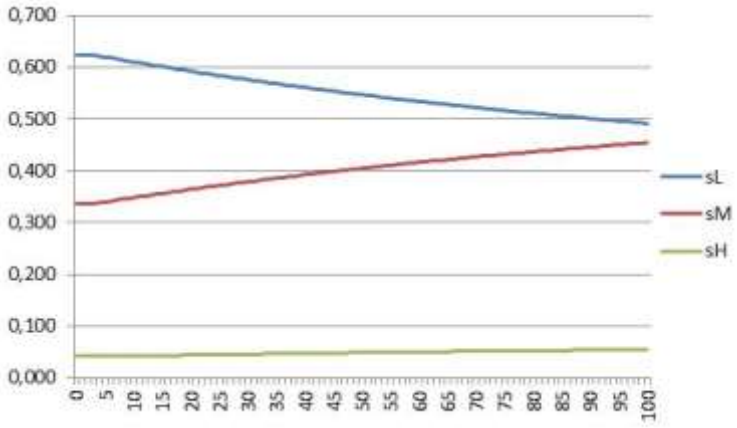
Then, we compute the impact of the decrease in the share of early school leavers on the skill structure. In order to take into account the lagged impact of this change due to the gradual transition between skill groups, we simulate the effect of a decrease in the share of early school leavers by means of a stock-flow model of the skill structure. In this simulation, we consider:

- A skill structure with low (L), medium (M) and high-skilled (H) workers, as in Roeger *et al.* (2008) and Varga *et al*. (2014),[19] with transition rates between skill groups inferred from the data on the skill structure for Portugal.
- A one-off 40.4% reduction in the share of early school leavers, with a 3-year lagged impact on the transition rate into the group of medium-skilled workers and a 6-year lagged impact on the transition rate into the group high-skilled workers.

As shown in Figure 9, the change in the skill structure is very gradual, which reflects the slow turnover of the Portuguese population and, hence, of the labour force. This, in turn, reflects the low fertility rate in Portugal (we have considered that the fertility rate remains constant at its 2014 value, 0.8%, throughout the simulation periods).

[19] See these papers for the exact definition of low, medium, and high-skilled workers that is used in the calibration of the DSGE model QUEST III.

Figure 9. Adjustment of the shares of low, medium, and high-skilled workers (s_L, s_M, s_H) in the labour force, after a one-off 40.4% reduction in the share of early school leavers, in a stock-flow model of the skill structure – baseline scenario



Source: own elaboration.

Note: simulation in a stock-flow model of the skill structure considering a fertility rate of 0.8% per year (data from INE for Portugal, 2014) and constant total population; the skill structure reaches the new steady state after 500 periods.

We then use the simulated change in the shares of each skill group over time, as depicted by Figure 9, to quantify the (exogenous) shock to the skill structure that feeds the macroeconomic model. In particular, we do this by considering a recursive exogenous shock to the skill structure variables, s_L, s_M and s_H, over 50 years, such that their time paths match those observed in Figure 8 over 50 periods. Table 15 depicts the results of the simulation exercise in the macroeconomic model (Stage 4 of Figure 8).

Table 15. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a cumulative change in the skill structure variables, s_M and s_H, of, respectively, 0.0835 p.p. and 0.00814 p.p., over 50 years – baseline scenario

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP (p.p.)	0.007	0.016	0.022	0.025	0.026	0.026	0.034	0.040
Employment	0.001	0.013	0.032	0.058	0.084	0.203	0.387	0.746
Real wages	0.035	0.100	0.160	0.220	0.277	0.588	1.366	3.924
GDP	0.099	0.194	0.287	0.384	0.484	1.025	2.230	5.827
External balance/GDP (p.p.)	0.020	0.028	0.030	0.029	0.026	0.015	0.001	-0.022

Source: own elaboration.

Note: 800-period simulation for convergence after a 50-period recursive shock to the skill structure variables.

First, medium-skilled workers replace low-skilled workers. The former are employed in the production sector at higher efficiency than the latter, thus gradually increasing aggregate output. At a later stage, high-skilled workers also start replacing low-skilled (and medium-skilled) workers. The productivity gains gradually raise real wages and aggregate employment. In the short-run (first four years of the simulation), however, the shift in relative wages across skill types reduces R&D employment and R&D production. After that period, the increase in firms' expected profits overweighs the relative wages effect and thus R&D employment and the technological-knowledge stock (measured by patents in the model) start to grow above the pre-shock steady-state level. These variables also benefit from the increase in the share of high-skilled workers that starts to show up by the fifth year. After 50 years, aggregate output is increased by 5.82%, real wages by 3.92% and aggregate employment by 0.75% from the pre-shock steady-state level.

The increase in exports induced by the productivity gains increase the current account balance-to-GDP ratio at first, but this moves to a slightly negative change vis-à-vis the initial steady state over 50 years as imports also respond to increased aggregate demand.

The ratio of the public budget balance to GDP also increases but only slightly, reflecting the stabilizing effect of the feedback budget rules assumed in this exercise.

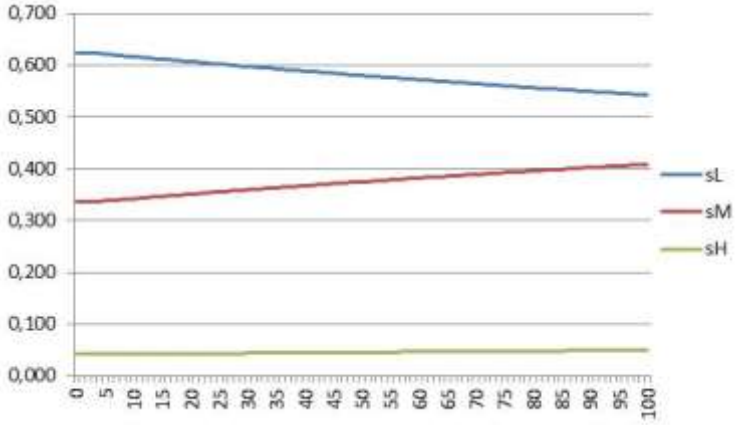
It is important to note that education reforms that increase the amount of schooling take time to build up due to the cohort effects that generate an only gradual impact on the labour force, as illustrated above by

Figure 9. Nevertheless, sizable macroeconomic effects are to be expected in the long-run, according to our simulation exercise.

We have also run a pessimistic scenario, by considering a different assumption on the fertility rate for Portugal. Instead of considering this demographic variable remains constant at its 2014 value (0.8%), we take the downward trend over 2000-2014 and extrapolate it for 2015-2050. By taking the resulting year average, we fix 0.4% as the value of the fertility rate in the new simulation.

Figure 10 depicts the change in the skill structure after a one-off 40.4% reduction in the rate of early school leavers in this case, with the same lagged impact as in Figure 8, and Table 16 summarises the results of the simulation exercise in the macroeconomic model (Stage 4 of Figure 8).

Figure 10. Adjustment of the shares of low, medium, and high-skilled workers (s_L, s_M, s_H) in the labour force, after a one-off 40.4% reduction in the rate of early school leavers, in a stock-flow model of the skill structure – "low fertility rate" scenario



Source: own elaboration.

Note: simulation in a stock-flow model of the skill structure considering a fertility rate of 0.4% per year ("low fertility rate" scenario) and constant total population; the skill structure reaches the new steady state after 800 periods.

Table 16. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a cumulative change in the skill structure variables, s_M and s_H, of, respectively, 0.0458 p.p. and 0.00443 p.p., over 50 years – "low fertility rate" scenario

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP	0.005	0.009	0.012	0.013	0.014	0.014	0.019	0.023
Employment	0.001	0.006	0.015	0.028	0.041	0.103	0.205	0.444
Real wages	0.019	0.052	0.082	0.111	0.14	0.3	0.719	2.248
GDP	0.051	0.097	0.144	0.192	0.243	0.524	1.178	3.361
External balance/GDP	0.008	0.013	0.014	0.014	0.013	0.008	0.002	-0.014

Source: own elaboration.

Note: 800-period simulation for convergence after a 50-year recursive shock to the skill structure variables.

As expected, the effects are qualitatively similar to those obtained in the baseline scenario (Table 15), but of smaller magnitude. After 50 years, output is increased by 3.36%, real wages by 2.25% and employment by 0.44% from the pre-shock steady-state level. That is, by considering a fertility rate that is 50% of the one in the baseline scenario, the impact of the skill-structure shock on those macroeconomic variables is of about 58% of the one in that scenario. This is still quite a sizeable impact in spite of the very low fertility rate considered in this case.

4.2.2. Schooling quality – school achievement mechanism

In this section, we simulate the impacts of the set of reform measures pertaining to the reform areas "Development of early intervention strategies", "Promotion of school autonomy", and "Consolidation of the implementation of curricula goals" (B2 in Table 1; see the details on the reform measures in Table B2 and on the reform variables in Table B3, Appendix B), by relying on the school achievement transmission mechanism in the model.

Box 4. Reforms that improve school achievement

Comprehensive studies of determinants of achievement (proxy for the individuals' cognitive skills) have studied a number of potential factors (see, *e.g.*, Hanushek and Woessmann, 2010, for an extensive review of the empirical literature). However, not all of them have been found relevant or statistically significant. In Table 17, we synthetise the main results concerning the determinants usually regarded as more sensitive to policy intervention.

Table 17. Policy-driven determinants of school achievement

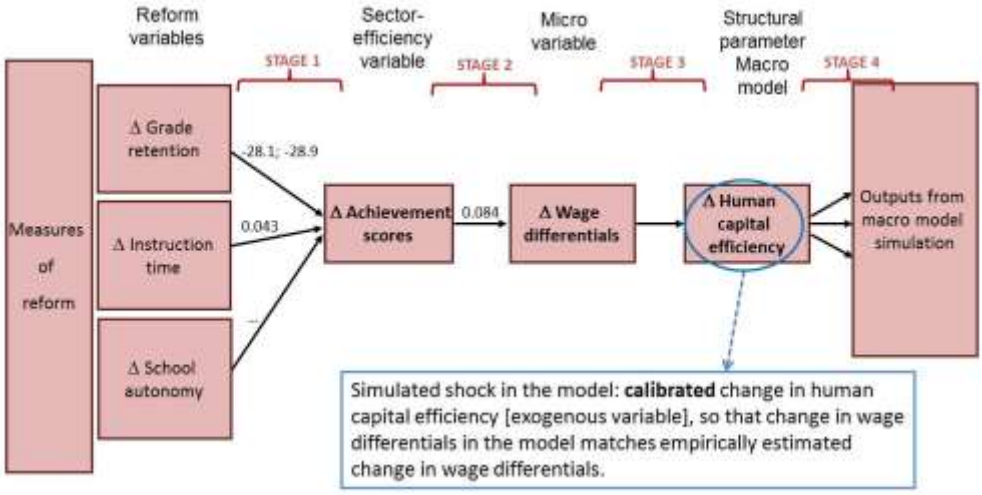
Input	Significance (sign of the relationship)
School inputs	Yes (+): teacher education; shortage of material; instruction time. No: class size; expenditure *per* student.
Institutions	
Accountability	Yes (+): exit exams/standardized tests; measures aimed at teachers; measures aimed at schools.
Autonomy	Yes (+): above a certain threshold of economic development / combined with accountability measures.
Competition	Yes (+): share of private operated schools in the country; share of public funding in the country.
Grade retention	Yes (-)
Pre-primary education system	Yes (+)

Source: own elaboration.

Bearing in mind the scope of the implemented set of reform measures, as described in Table B2, we take, as reference, the estimated impact of the change in selected reform variables - instruction time, school autonomy combined with accountability, and grade retention - on the achievement score (e.g., measured by the PISA Math score), where the latter is the key sector-efficiency variable (see Figure 11, STAGE 1). As regards instruction time, empirical estimates of its impact on school achievement can be found in the cross-section/panel studies by Woessmann (2003), Fuchs and Woessmann (2007), Schultz (2009), Hanushek and Woessmann (2010), and West and Woessmann (2010). Also, Woessmann (2003), Woessmann (2005), Fuchs and Woessmann (2007), and Hanushek and Woessmann (2010) provide empirical estimates regarding school autonomy, conditional on the existence of external exit exams (as a measure of school accountability). Finally, recent empirical estimates with respect to grade retention can be found in Schultz (2009), West and Woessmann (2010), and Pereira and Reis (2014).

Figure 11, below, depicts the selected transmission mechanism and the translation of the change in the reform variables into shocks in the macro model (Stages 1 to 4).

Figure 11. Education: school achievement transmission mechanism and translation into shocks in the macro model



Source: own elaboration.

Note: the numbers next to the arrows are estimated coefficients provided by Fuchs and Woessmann (2007), Hanushek and Woessmann (2010), Schultz (2009), and Hanushek and Zhang (2009), and are the same as those reported in Table 18, in columns (b) and (d) (data on school autonomy coefficients are presented in Table 18).

Following the described approach, we first compute the evolution of the selected reform variables in 2009-2012/2015, depending on the latest year with available data. We use data from the OECD PISA database and from the Ministry of Education (Portugal) BI database. Then, using the more conservative available empirical estimates of the relationship between reform variables and sector-efficiency variable (the achievement score), we compute the estimated change in the PISA Math achievement score.

Next, we consider the relationship between the sector efficiency variable and the micro variable. Hanushek and Zhang (2009) estimate the impact of changes in an adult achievement score (IALS – International Adult Literacy Survey) on the annual earnings from employment, with the estimated semi-elasticity being of 0.098 for the average of 12 developed countries. The tests on the IALS surveys are identified as being very practical, but they have been shown to be closely related to the PISA scores for individuals, with a correlation of 0.85 (see Hanushek and Woessmann, 2010). Considering this correlation and the fact that both PISA and IALS provide standardized scores, we get a semi-elasticity of annual earnings with respect to PISA Math scores of 0.084, which allows us to estimate the change in wage differentials.

Finally, we consider the relationship between human capital efficiency, skill groups, and wages implied by the labour demand equations in the model (see the equations in Roeger *et al.*, 2008, p. 16) in order to calibrate human capital efficiency such that the change in wage differentials in the model matches the estimated change in wage differentials implied by the improvements in achievement.

In other words, the micro evidence shows that reforms improve achievement scores and that these are reflected in higher wages (Stages 1 and 2 in Figure 11 and calculations in Table 18); in the macro model's labour market (Stage 3), these higher wages must be a reward for the human-capital-efficiency gains brought about by the reforms.

Table 18. STAGES 1 and 2: Changes in selected reform variables from 2009 to 2012/2015 – school achievement mechanism

Reform variables	Reform variable before reform	Reform variable after reform	Change (a)	PISA Math score esti-mated coefficient (b)	**Estimated impact on PISA Math score** (c)=(a)*(b)	Annual earnings semi-elasticity relative to PISA Math score (d)	**Estimated impact on annual earnings (%)** (c)*(d)
(1) Instruction time (minutes per week) *(OECD-PISA data, 2009-2012)*	718.5	763.5	45.0	0.043	**1.935**		
(2) School autonomy *(OECD-PISA data, 2009-2012)*							
Determining course content	8	34	26	11.200	**2.912**		
Establishing teachers' starting salaries	6	9	3	6.420	**0.193**		
Choosing textbooks	100	100	0	57.898	**0**		
Deciding on budget allocations within school	92	97	5	8.513	**0.412**		
Formulating school budget	73	82	9	-5.734	**-0.516**		
Hiring teachers	70	76	6	6.483	**0.411**		
(3) Grade retention rate *(Min Education data, 2013-2015)*							
in Primary	0.113	0.088	0.025	-28.102	**0.703**		
in Secondary	0.185	0.170	0.015	-20.900	**0.314**		
Total					**6.002**	0.084	**0.502**

Source: own elaboration based on the data from OECD PISA database and the Ministry of Education BI database and on the estimated elasticities provided by the empirical literature: (1) Hanushek and Woessmann (2010); (2) Fuchs and Woessmann (2007); (3) Schultz (2009); (d) Hanushek and Zhang (2009).

The estimated impact of the reform measures on the achievement score is of 6.002 (lower bound) and the estimated impact of the latter on annual earnings is of 0.502%.

However, one must account for the lagged impact of reforms due to:

- Initial student cohort effect (3 to 6 years to be exposed to the reform measures);
- Gradual entry of student cohorts into the workforce: $\frac{1}{\text{working lifetime}} \cdot 100$ percent of workers are replaced per year.

For an average working lifetime of 40 years, we will consider the following time-piecewise relationship between the sector-efficiency variable and the micro variable:

$$\Delta Wages_t = wage\ coefficient \cdot \Delta Achievment \cdot \frac{1}{40} + \Delta Wages_{t-1},\ 0 < t \leq 40,$$

$$\Delta Wages_t = wage\ coefficient \cdot \Delta Achievment\ ,\quad t > 40.$$

Therefore, considering the relationship between wages and human capital efficiency in the model, as well as the lagged impact of reforms, as explained above, we capture the employment earnings effect in the model by calibrating a cumulative change in the human capital efficiency of medium and high-skilled labour of, respectively, 0.00766 and 0.01614, over 50 years.

Table 19 summarises the results of the simulation exercise in the macroeconomic model (Stage 4 of Figure 11).

Table 19. STAGE 4: Impacts on selected macro variables (% change from initial Steady State) of a cumulative change in the human capital efficiency of medium and high-skilled labour of, respectively, 0.00766 and 0.01614, over 50 years

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y
Public budget/GDP	0.001	0.003	0.005	0.006	0.007	0.008	0.008	-0.007
Employment	-0.008	-0.010	-0.011	-0.012	-0.013	-0.019	-0.035	-0.079
Real wages	0.013	0.024	0.035	0.046	0.057	0.116	0.258	0.672
GDP	0.010	0.021	0.033	0.045	0.057	0.124	0.286	0.738
External balance/GDP	0.007	0.008	0.008	0.008	0.008	0.006	0.003	-0.005

Source: own elaboration.

Note: 800-period simulation for convergence after a 50-year recursive shock to human capital efficiency.

The increase in human capital efficiency for medium and high-skilled workers raises labour productivity in both production and R&D activities. The fact that the efficiency shock is more pronounced for high-skilled workers (namely reflecting the amplifying effect of the skill premium of high- over medium-skilled workers) and the ensuing relative increase in high-skilled wages leads to a reallocation of labour from R&D to production activities, and, within the latter, from low- and medium-skilled to high-skilled workers. However, the direct increase in the efficiency of high-skilled workers more than compensates the reduction in R&D labour after the first year of the simulation, such that the technological-knowledge stock starts to grow above the pre-shock steady-state level. The direct productivity gains plus those arising from more efficient R&D activities induce an increase in aggregate output throughout the adjustment towards the new steady state. After 50 years, aggregate output and real wages rise, respectively, 0.74% and 0.67% above the pre-shock steady-state, while aggregate employment is slightly decreased (by 0.08%).

Exports increase throughout time, reflecting the impact of productivity gains and increased aggregate output. This effect leads to a positive effect on the current account, but it vanishes in the long run, as imports respond to the increase in aggregate demand.

The ratio of the public budget balance to GDP also increases but only slightly, reflecting the stabilizing effect of the feedback budget rules assumed in this exercise.

As in the case of the reforms feeding in through the school attainment mechanism, it is noteworthy that education reforms that increase school achievement take time to build up due to the cohort effects that generate an only gradual impact on the labour force. Nevertheless, the expected macroeconomic effects are quite sizable in the long-run, according to our simulation exercise.

4.2.3. Summary of results – Education

The results concerning Education are summarised below in Table 20, presenting the macroeconomic impacts of the reforms in Education that result from the evolution of the quantified reform variables, in general over the period 2010-2015 (in some cases the periods covered are different, as referred throughout this section); while Appendix E presents the impacts from the same reforms in a different way, summarising the long-run (50-year horizon) aggregate output effects of a 1% change/improvement in each reform variable.

The results show that the considered reforms (accounting for both quantity and quality of schooling) take time to materialise due to the typical cohort effects (as the somewhat small short-to-medium-run impacts show) but have quite sizeable and positive potential macroeconomic impacts in the long-run: they reach

about a 4.1% to 6.6% (depending on the scenario for the fertility rate) improvement in annual GDP over 50 years.

Table 20. Summary of the macroeconomic impacts of reforms in Education

Transmission mechanism / modelisation				Impacts on selected macro variables				
B - Reforms in Education								
B1	Schooling attractiveness	School attainment (1) Given the values reported for the reform variable and the resulting simulated impact on the skill structure over 50 years, we consider a cumulative change in the shares of medium-skilled and of high-skilled workers of, respectively, 0.0835 p.p. and 0.00814 p.p., over 50 years – baseline scenario		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	0,007	0,026	0,026	0,034	0,040
			Employment	0,001	0,084	0,203	0,387	0,746
			Real wages	0,035	0,277	0,588	1,366	3,924
			GDP	0,099	0,484	1,025	2,230	5,827
			External balance/GDP	0,020	0,026	0,015	0,001	-0,022
		School attainment (2) Given the values reported for the reform variable and the resulting simulated impact on the skill structure over 50 years, we consider a cumulative change in the shares of medium-skilled and of high-skilled workers of, respectively, 0.0458 p.p. and 0.00443 p.p., over 50 years – "low fertility rate" scenario		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	0,005	0,014	0,014	0,019	0,023
			Employment	0,001	0,041	0,103	0,205	0,444
			Real wages	0,019	0,140	0,300	0,719	2,248
			GDP	0,051	0,243	0,524	1,178	3,361
			External balance/GDP	0,008	0,013	0,008	0,002	-0,014
B2	Schooling quality	School achievement The estimated impact of the reform measures on the achievement score is of 6.002 (lower boundary) and the estimated impact of the latter on annual earnings is of 0.502%. To capture the earnings effect in the model, we calibrate a cumulative change in the human capital efficiency of medium and high-skilled labour of, respectively, 0.00766 and 0.01614, over 50 years.		1Y	5Y	10Y	20Y	50Y
			Public budget/GDP	0,001	0,007	0,008	0,008	-0,007
			Employment	-0,008	-0,013	-0,019	-0,035	-0,079
			Real wages	0,013	0,057	0,116	0,258	0,672
			GDP	0,010	0,057	0,124	0,286	0,738
			External balance/GDP	0,007	0,008	0,006	0,003	-0,005

Source: own elaboration. Note: Employment, real wages and GDP -- % change from initial steady state; public budget/GDP and external balance/GDP -- p.p. change from initial steady state. The impacts result from changes in reform variables between 2009 and 2012-2015, depending on the latest year with available data.

5. Conclusions

This report is an exercise of evaluation of the macroeconomic impacts of the structural reforms put forward by Portugal in the areas of Justice and Education. Apart from the necessary review of relevant literature, the two main blocks of this work are the definition and layout of the methodology (Section 3) and the results from the application of that methodology to the reforms in Justice and Education in Portugal over 2010-2014 (Section 4).

The methodology follows and extends the standard approach used by the European Commission (*e.g.*, Roeger *et al.*, 2008). It is based on two fundamental processes: (i) the quantification of the microeconomic effects of structural reforms, and (ii) the reaction of the macroeconomic model to such microeconomic effects. In order to quantify the microeconomic effects, we typically collect the reform measures, associate them with reform variables that impact on sectoral (Justice or Education) indicators which, in turn, affect some microeconomic variables. These microeconomic effects are then translated into shocks to the (micro-founded) macroeconomic model, a key process that corresponds to the identification of the mechanisms of reform transmission to the macroeconomy. The ensuing computation (through simulation) of the dynamic system's reaction to those shocks delivers the results of the reforms in terms of the main macroeconomic aggregates.

Two important caveats are in order in what concerns the application of this methodology. First, in many cases it is not possible to establish a direct mapping from each reform measure into reform variables and/or variables of sectoral performance. This is why in several instances we have to consider groups of reform measures. The second caveat is that the consideration of various mechanisms of transmission from reforms to macroeconomic outcomes does not necessarily allow for the computation of total effects by adding up the results of the various mechanisms. This is due to the interdependence between some mechanisms, and the fact that, for each mechanism, we collect microeconomic elasticities from existing individual studies that are not necessarily fully compatible with each other. Thus, rather than adding up all the mechanisms' results, we prefer a more cautious interpretation of the different mechanisms as a sensitivity analysis of the macroeconomic impacts of the reforms.

The selection of the identified reforms in Justice and Education for which macroeconomic impacts could be computed following the proposed methodology refers to the following areas of reform: judicial "Overall system efficiency" (*e.g.*, judicial organisation, claims enforcement, out-of-court settlement) and the "Insolvency regime", in the case of Justice; and mainly "Development of early intervention strategies", "Promotion of school autonomy", "Introduction of vocational tracks with strengthening and upgrading of vocational training" and "Consolidation of the implementation of curricula goals", in the case of Education.

The results (from Section 4, summarized in Tables 14 and 20 and in Appendix E) show that the considered reforms have sizeable and positive potential macroeconomic impacts in the medium-to-long-run, although dependent on the transmission mechanism (particularly in Justice).[20]

Considering the reforms that have improved the overall system efficiency, the long-run (50 years) impacts on annual GDP range from a 0.268% (0.135% in the medium-run – 10 years) increase through the firms' entry cost mechanism to a 1.568% (0.652% already in the medium-run) increase through the risk premium channel. However, the strongest effects, by far, come potentially from improvements in the insolvency regime (accounting for both entrepreneurship and liquidity constraint mechanisms): if credible, such improvements can be perceived as a regime change and potentially increase annual GDP by about 5.1% in 10 years and 6.2% in 50 years.[21]

As for the considered Education reforms, the results (accounting for both quantity and quality of schooling) take longer to materialise due to the typical cohort effects, but are quite strong in the long-run, potentially reaching about a 4.1% to 6.6% (depending on the scenario for the fertility rate) improvement in annual GDP over 50 years.

The magnitude of the impacts simulated in our work is in line with previous work that has shown that the potential effect of reforms can be large. For instance, based on a benchmarking approach applied to the EU countries, it was found that closing half the gap *vis-à-vis* best performers in a number of key structural indicators can add around 6% to EU GDP after 10 years (Varga and in't Veld, 2014; see also Bouis and Duval, 2011).

It must be stressed that these are just potential effects of the considered reforms, to be interpreted with caution. The translation of reform measures into quantifiable changes in structural indicators in the macroeconomic model and the ensuing impact assessment through simulation are **surrounded by uncertainty**, namely related to the:

- Direct quantification of the reform measures, given the uncertainty regarding the speed of implementation of reforms, their effectiveness, and protracted direct outcomes;
- Robustness of the (few) empirical estimates on which the assessment has to rely;
- Sensitiveness to certain assumptions of the macroeconomic model.

Similarly to the reforms process itself, the work that has been conducted here is inevitably work in progress. In some cases, reform variables and sector-efficiency indicators need to be updated as soon as more recent ones become available – the schooling quality reform variables available from OECD-Pisa database (instruction time and school autonomy), currently available up to 2012 only, constitute an obvious case. This process of assessing macroeconomic impacts of reforms will largely gain, both in quantity and quality, as more (and more detailed) microeconometric assessments of individual reforms become available. In general, future design of reforms can also help substantially by improving the quantification of reform variables end sector-efficiency objectives or expected outcomes.

[20] In addition to the reported results, we have conducted some tentative exercises that can be taken as future directions for improvement and deepening of this work. For instance, in order to start assessing effects of reforms on the volatility of the business cycle, we simulated a 1 p.p. shock in the Euro Area imports as percentage of GDP, and compared the output gap dynamics with and without reforms. We confirmed, for example, that the Justice-sector reforms operating through the firms' entry cost or the allocative efficiency mechanisms have the additional benefit of reducing the cycle phase duration; and reforms operating through the international technology linkages mechanism reduce both the duration and the amplitude of the cycle phase.

[21] We are aware that we miss an important additional mechanism concerning the insolvency regime mechanism: the reduction in firms' interest rate spreads resulting from the improvements in the rescue and recovery framework. This effect would operate through the financing cost mechanism already included in the assessment of reforms in the overall judicial system efficiency; however, for the insolvency regime we could not find estimates of its impacts on aggregate non-performing loans. This provides a concrete example of how useful a specific microeconometric study could be.

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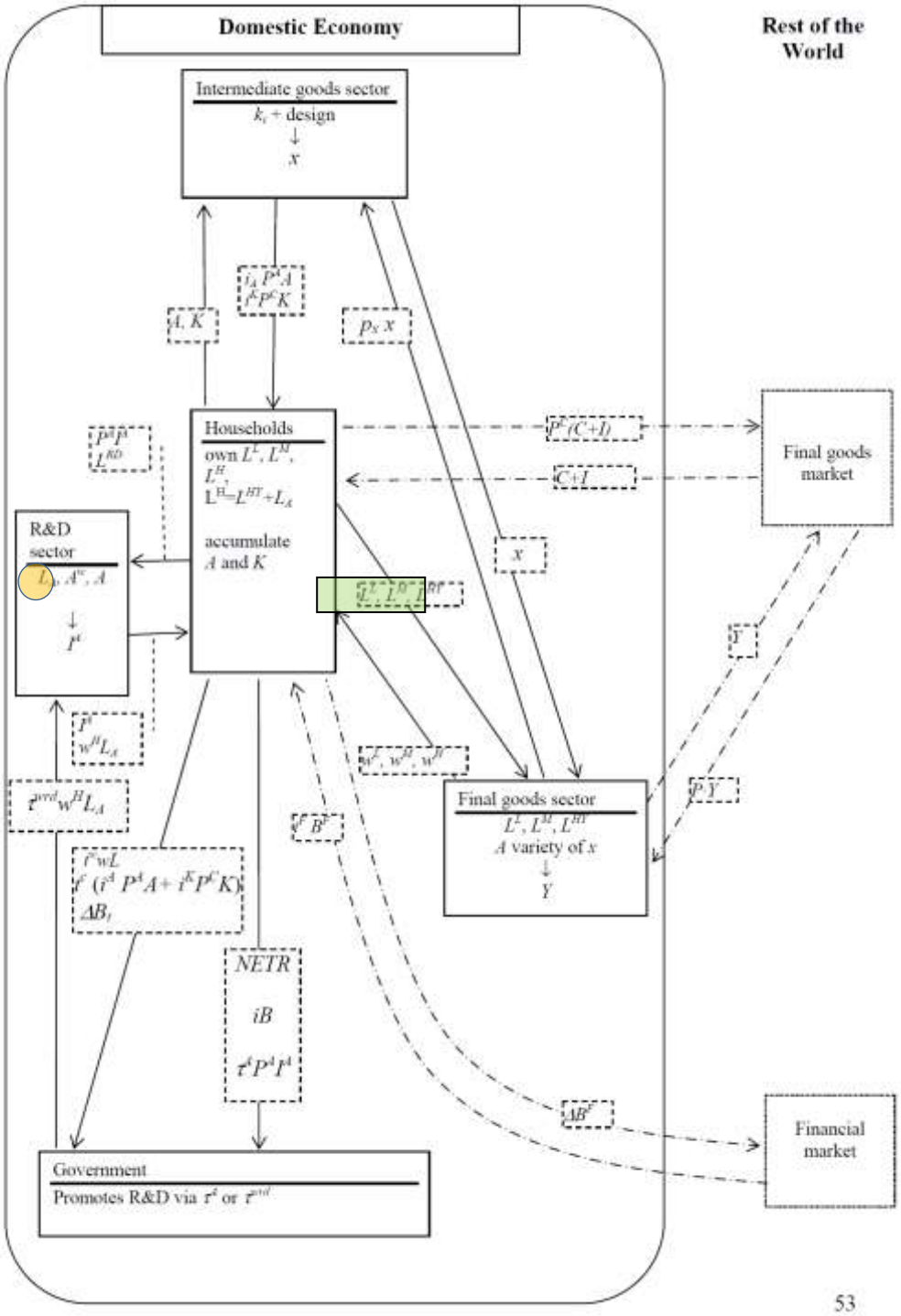
Appendix A. Flows representation in the Roeger *et al.*'s (2008) model

Figure A1. Simplified representation of the flows in the model by Roeger *et al.* (2008)



Source: own elaboration, based on Roeger et al. (2008)

Appendix B. Reform areas/measures and reform variables in Justice and Education

In this appendix, we group the specific measures of structural reform already implemented into broader categories (areas) of structural reforms, bearing in mind the expected direct effect of each specific measure on the reform and sectoral efficiency variables analysed in Section 4.

Table B1 covers the reforms in Justice. The simulation exercises presented in Section 4 focus on the assessment of the macroeconomic impact of structural reforms in Justice concerning the areas of "Overall system efficiency" and "Insolvency regime". The remaining areas (in grey in Table B1) are not covered by our simulation exercises.

Table B2 lists the reforms in Education. The simulation exercises presented in Section 4 focus on the transmission mechanisms that cover mainly the areas of "Development of early intervention strategies", "Promotion of school autonomy", "Introduction of vocational tracks with strengthening and upgrading of vocational training", and "Consolidation of the implementation of curricula goals, in the case of Education".

Table B3 summarises the selected reform variables in Justice and Education, providing details on the respective data source and latest year with available data.

Table B1. Justice: reform areas / measures and respective reform variables

Reforms in Justice										
Reform area		Reform measure	Reform variable							
			Demand side		Supply side					
			Litigation rate	Other	Number of courts per population	Court size (jugdes per court)	Number of judges per population	Share of public budget for courts ICT	Overall index of pre-insolvency framework	Other
Overall system efficiency	Data and IT infrastructure	*Implementação do sistema CITIUS*						↑		
	Judicial reorganisation	*Implementação do novo mapa judiciário*			↓	↑	↑			
		Instituição dos Tribunais da Propriedade Intelectual e da Concorrência, Regulação e Supervisão								√
	Claims enforcement and processual backlog	*Novo Código de Processo Civil*								√
		Criação da Comissão para o Acompanhamento dos Auxiliares de Justiça (CAAJ)								√
		Procedimento extrajudicial pré-executivo (PePEX)								√
	Out-of-court settlement	*Revisão do Regime Jurídico dos Julgados de Paz*	↓							
		Regime Jurídico da Mediação (regimes jurídicos da mediação civil e comercial, dos mediadores e da mediação pública)	↓							
		Nova Lei da Arbitragem Voluntária	↓							
		Novo Regime de Arbitragem Tributária	↓							
Insolvency regime	Rescue and recovery framework of firms	*Alteração ao Código de Insolvência e Recuperação de Empresas (CIRE) aditando o Processo de Revitalização de Empresas (PER)*							↑	
Corruption	*Melhoria do enquadramento jurídico relativo aos crimes por corrupção*	*Alteração ao Código Penal*								
		Alteração à Lei dos Crimes de Responsabilidade dos Titulares de Cargos Políticos (Lei n.º 34/87, de 16 de julho)								
		Alteração à Lei da corrupção no comércio internacional e no sector privado (Lei n.º 20/2008, de 21 de abril)								
		Alteração à Lei do regime de responsabilidade penal por comportamentos suscetíveis de afetar a verdade, a lealdade e a correção da competição e do seu resultado na atividade desportiva (Lei n.º 50/2007, de 31 de agosto)								
		Alteração à Lei que aprova medidas de combate à corrupção (Lei n.º 19/2008, de 21 de abril)								
Intellectual property rights	*Criação de tribunais especializados*	*Instalação do Tribunal de Propriedade Intelectual*								
Bureaucracy and court management	*Melhoria do procedimento administrativo*	*Novo Código do Procedimento Administrativo*								
	Melhoria do funcionamento dos tribunais administrativos e fiscais	*Revisão do Código de Processo dos Tribunais Administrativos*								
		Revisão do Estatuto dos Tribunais Administrativos e Fiscais								
Other	*Reforma Penal e Processual Penal*	*Alteração ao Código de Processo Penal*								
	Inventários	*Revisão do Regime Jurídico do Inventário*								
	Registos e Notariado	*Revisão do Regulamento Emolumentar dos Registos e Notariado*								

Source: GPEARI and own elaboration. Note: whenever a reform measure is expected to have a relevant impact on a given reform variable, we use an arrow (↑, ↓) to indicate its direction (upward/downward impact); a tick mark (√) is used whenever the direction is not definable.

Table B2. Education: reform areas / measures and respective reform variables (continues)

Reforms in Education								
Reform area	Reform measure	Reform variable						
		Schooling attractiveness	Schooling quality					
		Share of early school leavers	School inputs	Autonomy / Accountability	Grade retention	Competition	Pre-primary education system	Other
Development of early intervention strategies	*Reforço do apoio ao estudo no 1.º ciclo*	↓			↓			
	Acompanhamento extraordinário dos alunos nos 1.º e 2.º ciclos	↓			↓			
	Ensino à distância	↓						
	Implementação de sistema modular como alternativa ao currículo do ensino básico geral para os alunos maiores de 16 anos	↓			↓			
	Implementação do Programa Mais Sucesso Escolar (lançado no ano letivo 2009/2010) e respetivo alargamento	↓			↓			
	Medidas de combate à exclusão no âmbito da autonomia dos agrupamentos de escolas/escolas não agrupadas	↓			↓			
	Definição de planos individuais de transição para alunos com necessidades educativas especiais	↓			↓			
	Constituição temporária de grupos de homogeneidade relativa em termos de desempenho escolar em disciplinas estruturantes	↓			↓			
	Reforço dos serviços de Psicologia e Orientação	↓			↓			
	Portal de Estatísticas das Escolas do Ensino Secundário - disponibilização de mais dados/informação			↑				
	Revisão do Estatuto do Aluno e Ética Escolar							√
	Reconfiguração da rede de escolas do continente		√			√		
	Programa Territórios Educativos de Intervenção Prioritária	↓			↓			
	Ensino vocacional no Básico e no Secundário	↓			↓			
Promotion of school autonomy	*Descentralização - delegar competências nos municípios e aumentar as competências desconcentradas para os agrupamentos de escolas*			↑				
	Sistema de acompanhamento e monitorização do sistema escolar - acompanhamento permanente do funcionamento de cada escola			↑				
	Modelo de avaliação e financiamento das escolas			↑				
	Alargamento da rede de escolas com contratos de autonomia			↑				
Introduction of vocational tracks with strengthening and upgrading of vocational training	*Revisão dos currículos dos cursos profissionais*	↓						
	Diploma que regula os Cursos Técnicos Superiores Profissionais (TeSP), de 120 ECTS e de nível ISCED 5.	↓						
	Reorientação do percurso formativo do aluno através dos regimes de permeabilidade ou de equivalências para cada um dos regimes.	↓			↓			
	Fortalecimento da formação profissional ao nível do ensino secundário, aumentando a carga horária da formação em contexto de trabalho e a participação das empresas na formação, bem como a criação de cursos com planos próprios em consonância com as necessidades regionais/nacionais	↓			↓			
	Encaminhamento para percurso vocacional de ensino	↓			↓			
	Lista georrefenciada de todas as ofertas de cariz profissionalizante	↓						
	Sistema de escolas profissionais de referência empresarial (EPRE)	↓						
	Ligação investigação pública-sector empresarial: Agenda Nacional de Inovação, Política de clusterização, Agenda Portugal Digital e Estratégia Nacional de Investigação e Inovação para a Especialização Inteligente							√
	Implementação de garantia de qualidade do ensino e formação profissional em linha com o European Quality Assurance in Vocational Education and Training (EQAVET)	↓						

Table B2. (continued)

Reforms in Education								
Reform area	Reform measure	Reform variable						
		Schooling attractiveness	Schooling quality					
		Share of early school leavers	School inputs	Autonomy / Accountability	Grade retention	Competition	Pre-primary education system	Other
Improvement of lifelong learning	*Centros para a Qualificação e Ensino Profissional (CQEP) - orientação profissional de jovens e adultos*	↓						
	Adoção de percursos curriculares alternativos e programas integrados de educação e formação	↓						
	Medida Vida Ativa	↓						
Consolidation of the implementation of curricula goals	*Introdução de avaliação externa no final de cada ciclo e de metas curriculares*			↑				
	Reorganização das matrizes curriculares do ensino básico e secundário		↑					
	Harmonização curricular e da avaliação da aprendizagem		↑					
	Criação de equipas multidisciplinares nas escolas		↑					
	Criação de sistemas de recolha de informação e de monitorização dos resultados dos alunos			↑				
	Optimização da gestão dos recursos docentes		↑					
	Aplicação de novo regime da formação contínua de professores e reforço das componentes científicas nos cursos de formação de docentes		↑					
	Aplicação da prova de avaliação de conhecimentos e capacidades aos docentes		↑					
	Revisão dos programas curriculares		↑					
Management / Infrastructures	*Sistema interno de BI no MEC*			↑				
	Restruturação do Parque Escolar, E.P.E							√
	Simplificação das estruturas orgânicas do MEC							√
	Centralização dos processamentos dos vencimentos (conclusão prevista para 2020)							√

Source: GPEARI and own elaboration. Note: whenever a reform measure is expected to have a relevant impact on a given reform variable, we use an arrow (↑, ↓) to indicate its direction (upward/downward impact); a tick mark (√) is used whenever the direction is not definable.

Table B3. Selected reform variables, data sources and data availability (summary)

Reform variables	Latest year with available data
Justice	
Judges/Court *(Min. Justice data, 1st instance, legal entities)*	2013
Courts/population *(CEPEJ data, all courts, geographical location)*	2012
Litigation rate *(Min. Justice data, "ações" and "execuções cíveis")*	2015
Share of Public Budget for courts ICT *(CEPEJ, Min. Justice data)*	2014
Judges/population (*Min. Justice data*)	2013
Overall index of pre-insolvency framework (Carpus Carcea *et al.*, 2015)	2012
Education	
Share of early school leavers (*INE and Min. Education data*)	2015
Instruction time (minutes per week) *(OECD-PISA data)*	2012
School autonomy *(OECD-PISA data)*	2012
Grade retention rate *(Min. Education data)*	2015

Source: own elaboration.

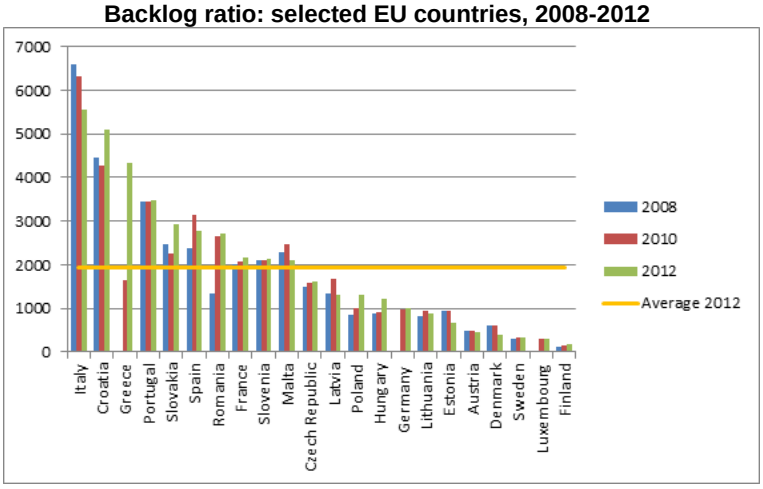
Appendix C. Evolution of key indicators (reform and efficiency variables) in Justice and Education in Portugal within Europe

As regards Justice, we compare Portugal within the European Union (EU) and across time, using data from the CEPEJ reports on “European judicial systems: efficiency and quality of justice" (2010, 2012 and 2014 editions)

Regarding court performance, there have been some improvements in the reduction of the disposition time (the time it takes for a pending case to be solved in a certain year); yet, in 2012, Portugal was still above the EU average in regards to both the backlog ratio (the number of unsolved cases *per capita*) and disposition time.

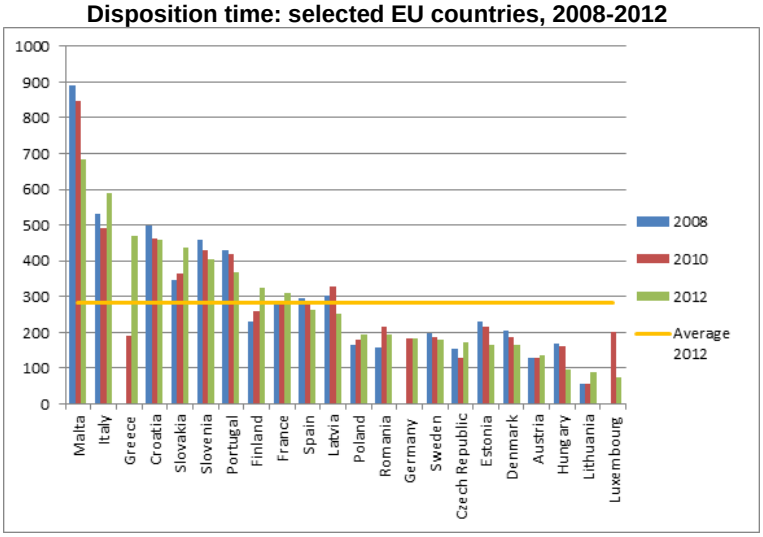
Among others, these improvements may have accrued from an increase in the number of judges per court, a reduction in the number of courts-to-population ratio, in spite of no significant changes in the share of public budget for courts ICT have occurred and a rise in the litigation rate (incoming cases per population) observed between 2008 and 2012. In 2012, the number of courts-to-population and the litigation rate were above EU average, while the number of judges per court and the share of public budget for courts ICT were still amongst the lowest records for the EU countries.

Backlog ratio: selected EU countries, 2008-2012



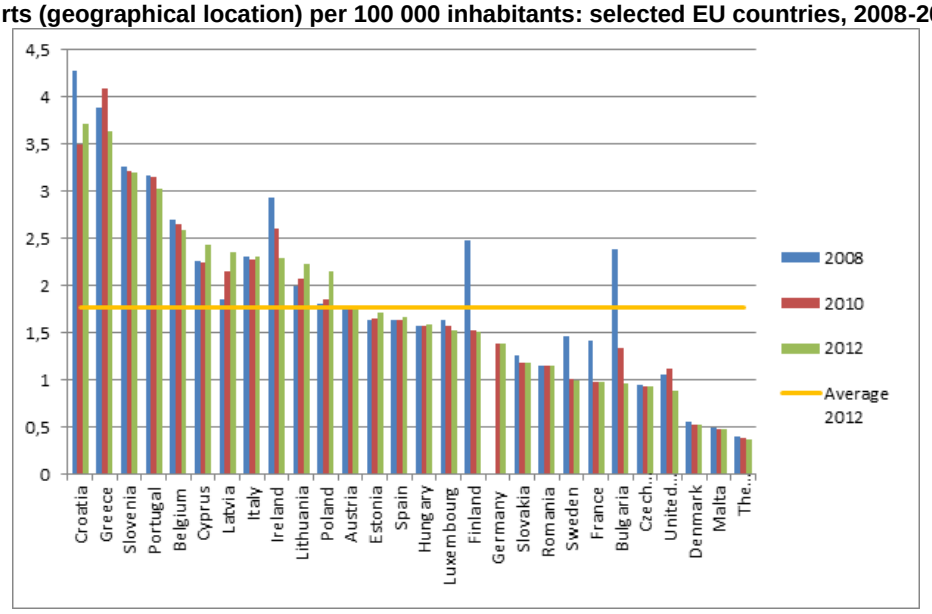
Source: own elaboration based on CEPEJ reports on “European judicial systems: efficiency and quality of justice" (2010, 2012 and 2014 editions), http://www.coe.int/t/dghl/cooperation/cepej/evaluation/default_en.asp in June 2016.

Disposition time: selected EU countries, 2008-2012



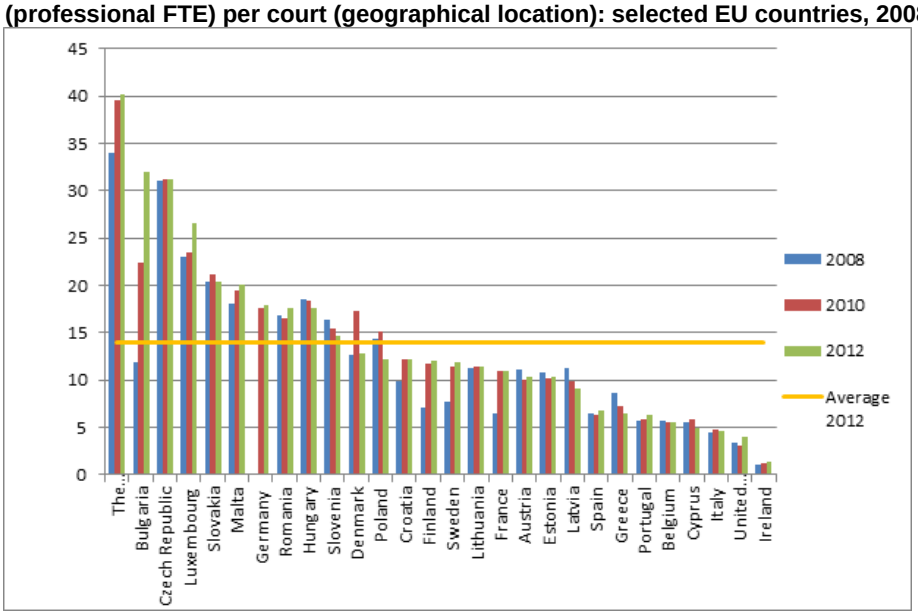
Source: own elaboration based on CEPEJ reports “European judicial systems: efficiency and quality of justice" (2010, 2012 and 2014 editions), http://www.coe.int/t/dghl/cooperation/cepej/evaluation/default_en.asp in June 2016.

Courts (geographical location) per 100 000 inhabitants: selected EU countries, 2008-2012



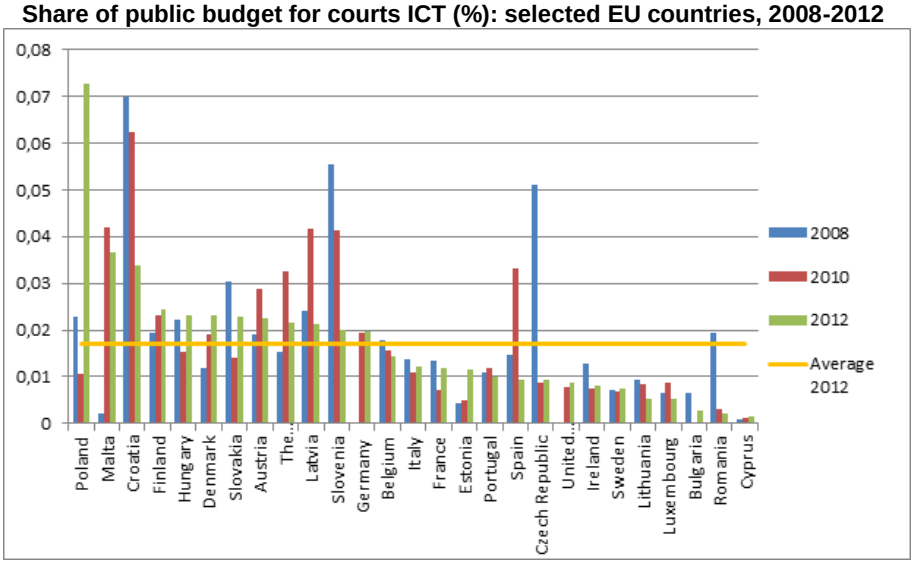
Source: own elaboration based on CEPEJ reports "European judicial systems: efficiency and quality of justice" (2010, 2012 and 2014 editions), http://www.coe.int/t/dghl/cooperation/cepej/evaluation/default_en.asp in June 2016.

Judges (professional FTE) per court (geographical location): selected EU countries, 2008-2012



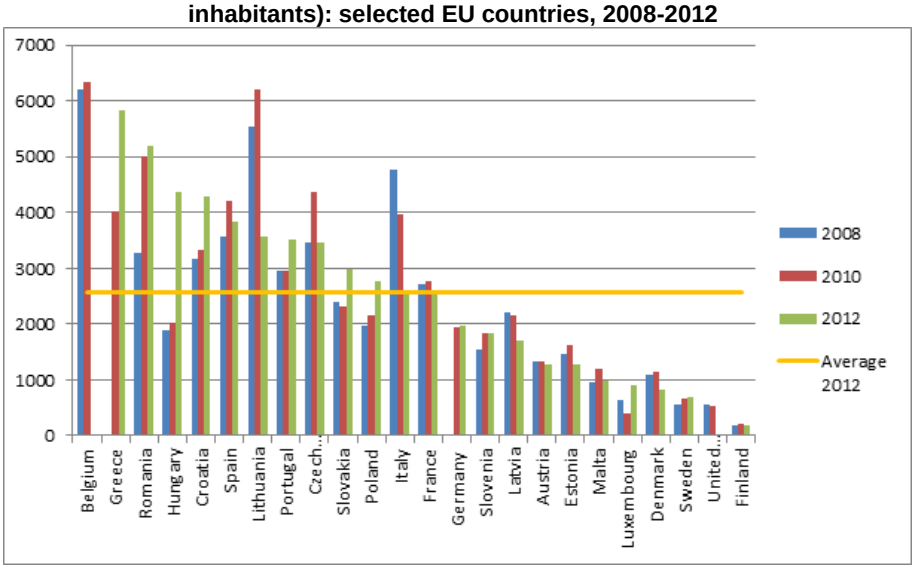
Source: own elaboration based on CEPEJ reports "European judicial systems: efficiency and quality of justice" (2010, 2012 and 2014 editions), http://www.coe.int/t/dghl/cooperation/cepej/evaluation/default_en.asp in June 2016.

Share of public budget for courts ICT (%): selected EU countries, 2008-2012



Source: own elaboration based on CEPEJ reports "European judicial systems: efficiency and quality of justice" (2010, 2012 and 2014 editions), http://www.coe.int/t/dghl/cooperation/cepej/evaluation/default_en.asp in June 2016.

Litigation rate (number of 1st instance civil and commercial litigious incoming cases per 100 000 inhabitants): selected EU countries, 2008-2012



Source: own elaboration based on CEPEJ reports "European judicial systems: efficiency and quality of justice" (2010, 2012 and 2014 editions), http://www.coe.int/t/dghl/cooperation/cepej/evaluation/default_en.asp in June 2016.

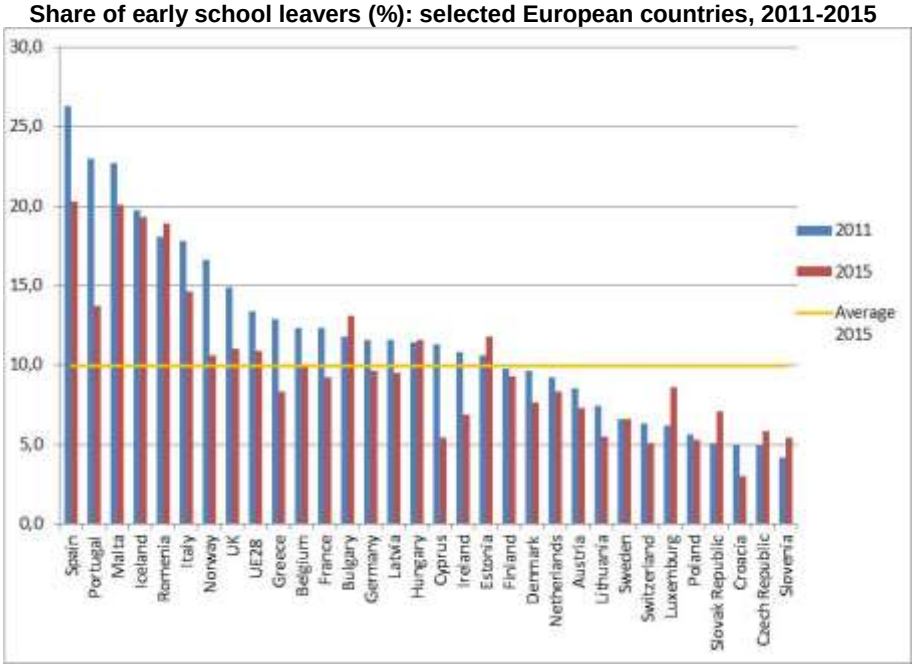
As far as Education is concerned, we compare Portugal within Europe / OECD and across time, using data from the OECD-PISA, Eurostat, and Ministry of Education-BI online databases.

As regards schooling attractiveness indicators, Portugal had the second largest rate of early school leavers in Europe (35 countries) in 2011, well above the UE-28 average, but experienced the largest fall in that rate in 2011-2015 (-9.3 p.p.), while the EU-28 average decreased by 2.5 p.p..

Looking at the indicators of schooling quality Portugal already had the largest instruction time (minutes per week) in Europe (33 countries) in 2009, and somewhat above the OECD average. Even so, instruction time increased in Portugal from 2009 to 2012, while it (slightly) decreased in the OECD average. In contrast, Portugal had the third largest rate of grade retention in Europe (primary and secondary school, 24 countries) in 2003, well above the OECD average, and that rate increased until 2012 (4.1 p.p.), while the OECD average decreased (by 0.5 p.p.). However, from 2013 to 2015, the rate in Portugal decreased by about 2 p.p.. Finally, regarding the school autonomy indicators (six indicators), Portugal was at or above the OECD average in 2009 in three cases ('Deciding on budget allocations within school'; 'Formulating school budget'; 'Choosing textbooks') and below or very well below in the other three ('Hiring

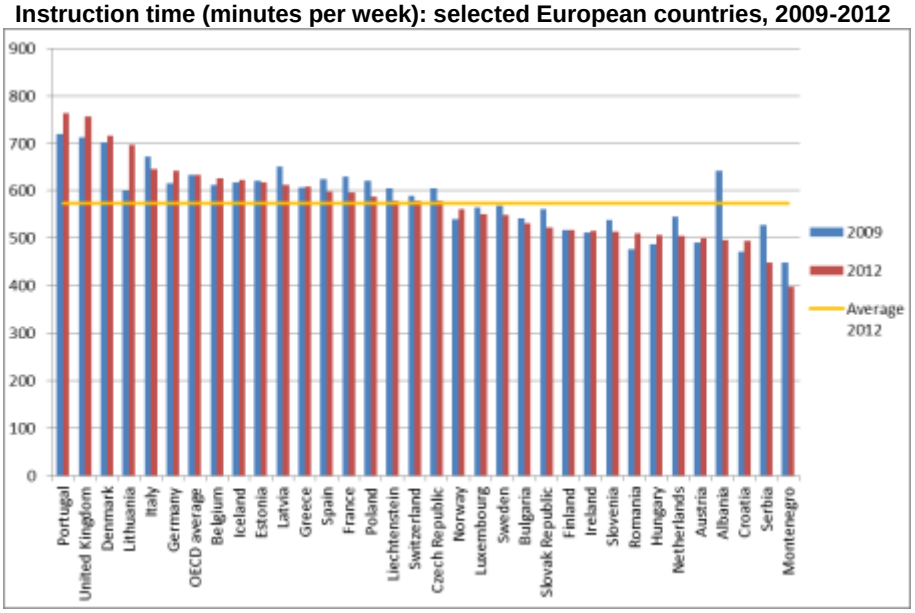
teachers'; 'Establishing teachers' starting salaries'; 'Determining course content'). From 2009 to 2012, all indicators increased in Portugal, except in the case of 'Choosing textbooks' (which already had a 100 percentage-point score). The largest increase occurred in 'Determining course content'. Yet, in spite of the upward movement, both 'Establishing teachers' starting salaries' and 'Determining course content' remained well below the OECD average.

Share of early school leavers (%): selected European countries, 2011-2015



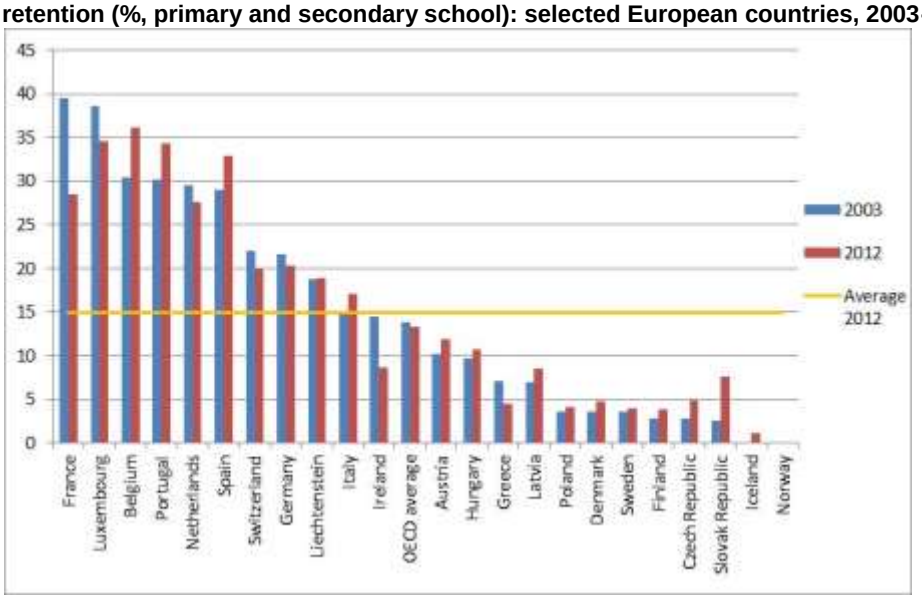
Source: own elaboration based on Eurostat online database, http://ec.europa.eu/eurostat

Instruction time (minutes per week): selected European countries, 2009-2012



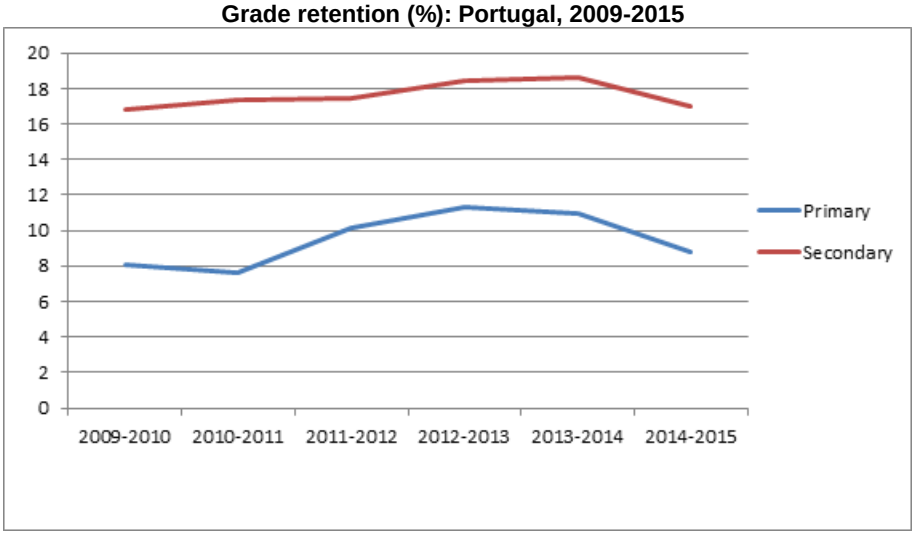
Source: own elaboration based on OECD PISA online database, www.oecd.org/pisa/keyfindings/

Grade retention (%, primary and secondary school): selected European countries, 2003-2012



Source: own elaboration based on OECD PISA online database, www.oecd.org/pisa/keyfindings/

Grade retention (%): Portugal, 2009-2015



Source: own elaboration based on Ministry of Education of Portugal, BI online database, http://bi.dgeec.mec.pt

School autonomy indicators: selected European countries, 2009 and change (p.p.) 2009-2012

	School autonomy over resource allocation								School autonomy over curricula and assessments			
	Deciding on budget allocations within school		Formulating school budget		Establishing teachers' starting salaries		Hiring teachers		Determining course content		Choosing textbooks	
	2009	Change 09-12	2009	Change 09-12	2009	Change 09-12	2009	Change 09-12	2009	Change 09-12	2009	Change 09-12
Albania	69	21	45	24	3	7	22	-9	43	23	99	-3
Austria	96	0	20	10	1	6	48	6	77	-3	99	1
Belgium	83	8	74	5	1	3	88	2	74	2	99	0
Bulgaria	99	-1	95	-29	86	-4	98	0	35	4	99	0
Croatia	91	-1	60	15	2	0	100	-1	61	-6	97	-4
Czech Republic	99	0	91	0	92	0	100	0	99	1	99	1
Denmark	100	-1	92	0	30	0	100	0	88	4	100	0
Estonia	99	-3	91	-2	27	-1	100	0	96	1	98	2
Finland	99	0	77	-6	16	-1	75	11	84	-8	100	0
Germany	98	-2	33	-18	3	0	66	-1	68	4	97	1
Greece	66	19	41	38	0	5	1	5	4	1	15	-4
Hungary	98	-3	88	-11	56	-8	100	0	85	1	100	0
Iceland	100	-8	87	0	20	3	100	-1	87	2	97	3
Ireland	94	-7	73	3	2	3	86	1	66	6	100	0
Italy	79	14	14	9	3	4	18	-4	86	2	100	0
Latvia	97	-1	88	7	25	31	98	2	64	-2	98	1
Liechtenstein	100	-11	37	26	6	28	41	52	41	39	60	34
Lithuania	72	15	52	27	19	59	100	0	85	5	99	1
Luxembourg	92	8	88	-6	6	15	62	8	80	-11	93	-7
Montenegro	87	-2	32	13	5	-3	100	0	39	-14	35	-13
Netherlands	100	0	100	0	80	8	100	0	99	-1	100	0
Norway	99	-1	83	-2	12	0	94	3	70	-4	99	0
OECD average	92	2	68	4	23	3	75	1	76	0	92	0
Poland	69	3	49	0	29	-10	99	-1	100	0	100	0
Portugal	92	4	73	9	6	3	70	6	8	26	100	0
Romania	53	9	32	20	3	31	9	58	80	-11	99	-19
Serbia	90	-1	36	0	10	-2	99	-2	43	-4	77	11
Slovak Republic	97	-3	85	-8	66	-8	100	0	95	1	95	0
Slovenia	99	-2	74	1	18	4	99	1	94	-6	99	0
Spain	97	1	67	18	5	1	34	0	63	-6	100	-1
Sweden	98	1	84	5	73	-9	100	0	92	-11	100	0
Switzerland	96	0	65	7	16	8	97	1	62	1	80	-5
UK	99	0	86	5	75	5	100	0	98	-1	100	0
Average:	91	2	65	5	24	6	78	4	70	1	91	0

Source: own elaboration based on OECD PISA online database, www.oecd.org/pisa/keyfindings/.

Note: Percentage of students in schools whose principals reported that only "principals and/or teachers" or both "principals and/or teachers" and "regional and/or national education authority" or "school governing board" has/have a considerable responsibility for the described tasks.

Appendix D. Detailed results of the simulation exercises

In this appendix, we present the results of our simulation exercises (Section 4) for a larger number of macroeconomic variables and for a larger number of time periods.

Firms' entry cost mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	-0.023	-0.003	0.024	0.048	0.068	0.137	0.210	0.277	0.299
PT_GBY (pp)	0.042	0.019	0.014	0.013	0.013	0.008	-0.004	0.003	0.000
PT_I	-0.103	-0.136	-0.123	-0.091	-0.054	0.093	0.186	0.198	0.202
PT_IG	-0.024	-0.023	-0.006	0.015	0.034	0.106	0.170	0.210	0.226
PT_IM	-0.005	-0.024	-0.029	-0.027	-0.023	-0.002	0.008	-0.006	-0.007
PT_INFLATION (pp)	0.001	-0.007	-0.006	-0.005	-0.005	-0.003	-0.001	0.000	0.000
PT_L	0.060	0.037	0.029	0.027	0.028	0.036	0.038	0.023	0.024
PT_LHY	-1.837	-2.030	-1.936	-1.842	-1.763	-1.514	-1.361	-1.350	-1.348
PT_LLY	0.035	0.031	0.023	0.021	0.021	0.029	0.032	0.018	0.018
PT_LMY	0.036	0.022	0.014	0.015	0.017	0.026	0.028	0.014	0.015
PT_LRD	7.752	7.055	6.693	6.396	6.142	5.348	4.847	4.707	4.709
PT_PAT	0.716	1.364	1.908	2.369	2.761	3.991	4.768	4.927	4.933
PT_WR	0.143	0.152	0.164	0.176	0.188	0.236	0.293	0.356	0.374
PT_WRH	1.225	1.263	1.213	1.177	1.149	1.067	1.041	1.091	1.109
PT_WRL	0.000	0.026	0.051	0.070	0.086	0.146	0.211	0.276	0.294
PT_WRM	0.022	0.042	0.055	0.069	0.086	0.149	0.214	0.278	0.296
PT_Y	-0.029	-0.024	-0.001	0.025	0.049	0.135	0.214	0.268	0.289
PT_TBY (pp)	-0.003	0.007	0.011	0.011	0.009	0.001	-0.003	0.002	0.002

Source: own elaboration.

Note: 500-period simulation for convergence (LR = Long run). GDP (PT_Y), Patents (PT_PAT), Employment (PT_L) [high-skilled in production (PT_LHY), medium-skilled (PT_LMY), low-skilled (PT_LLY), and high-skilled in R&D (PT_LRD)], Real wages (PT_WR) [high-skilled (PT_WRH), medium-skilled (PT_WRM), low-skilled (PT_WRL)], Private and Public investment (PT_I and PT_IG), Current account (PT_TBY), Public budget balance (PT_GBY), Inflation (PT_INFLATION).

Allocative efficiency mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	0.192	0.224	0.230	0.233	0.237	0.259	0.294	0.335	0.350
PT_GBY (pp)	-0.028	0.011	0.021	0.022	0.019	0.005	-0.005	0.002	0.000
PT_I	0.078	0.155	0.199	0.220	0.229	0.238	0.239	0.235	0.238
PT_IG	0.107	0.155	0.175	0.184	0.189	0.209	0.233	0.255	0.266
PT_IM	-0.053	-0.027	-0.008	0.001	0.005	0.009	0.006	-0.005	-0.006
PT_INFLATION (pp)	-0.021	-0.004	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	0.000
PT_L	-0.070	-0.030	-0.011	-0.004	-0.002	0.002	0.001	-0.009	-0.009
PT_LHY	-0.104	-0.014	-0.012	-0.007	-0.004	0.004	0.003	-0.015	-0.014
PT_LLY	-0.068	-0.039	-0.016	-0.005	-0.001	0.002	0.000	-0.010	-0.009
PT_LMY	-0.076	-0.022	-0.003	-0.001	-0.001	0.003	0.002	-0.008	-0.007
PT_LRD	0.177	0.053	0.002	-0.007	-0.006	0.014	0.013	0.001	0.003
PT_PAT	0.011	0.019	0.019	0.017	0.014	0.011	0.015	0.001	0.004
PT_WR	0.120	0.171	0.198	0.212	0.219	0.238	0.268	0.308	0.320
PT_WRH	0.065	0.183	0.212	0.219	0.222	0.237	0.267	0.311	0.323
PT_WRL	0.153	0.180	0.195	0.208	0.217	0.238	0.268	0.308	0.321
PT_WRM	0.104	0.155	0.195	0.214	0.222	0.237	0.268	0.307	0.319
PT_Y	0.147	0.202	0.223	0.233	0.239	0.264	0.295	0.326	0.340
PT_TBY (pp)	0.040	0.017	0.005	0.000	-0.002	-0.004	-0.003	0.001	0.001

Source: own elaboration.

Note: 500-period simulation for convergence (LR = Long run). See notes to Table "Firms' entry cost mechanism"

Risk premium – intangibles mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	-0.006	-0.004	0.001	0.005	0.008	0.019	0.030	0.042	0.045
PT_GBY (pp)	0.000	-0.004	-0.004	-0.004	-0.003	0.000	0.002	0.000	0.000
PT_I	-0.018	-0.025	-0.024	-0.019	-0.013	0.011	0.026	0.030	0.031
PT_IG	-0.003	-0.004	-0.002	0.001	0.004	0.014	0.023	0.032	0.034
PT_IM	0.003	-0.001	-0.002	-0.003	-0.003	-0.001	-0.001	0.000	-0.001
PT_INFLATION (pp)	0.001	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0.000	0.000
PT_L	0.011	0.005	0.003	0.001	0.001	-0.001	-0.002	-0.001	-0.002
PT_LHY	-0.325	-0.362	-0.345	-0.329	-0.316	-0.274	-0.249	-0.243	-0.243
PT_LLY	0.006	0.005	0.002	0.000	0.000	-0.002	-0.002	-0.002	-0.002
PT_LMY	0.006	0.003	0.000	-0.001	-0.001	-0.002	-0.003	-0.003	-0.003
PT_LRD	1.378	1.244	1.174	1.117	1.067	0.915	0.826	0.808	0.808
PT_PAT	0.129	0.244	0.340	0.420	0.488	0.695	0.817	0.845	0.846
PT_WR	0.026	0.028	0.030	0.033	0.035	0.044	0.053	0.062	0.065
PT_WRH	0.217	0.223	0.214	0.207	0.203	0.189	0.185	0.191	0.194
PT_WRL	0.000	0.006	0.011	0.014	0.017	0.028	0.039	0.049	0.052
PT_WRM	0.005	0.009	0.012	0.014	0.017	0.029	0.039	0.049	0.052
PT_Y	-0.005	-0.005	-0.002	0.002	0.006	0.018	0.030	0.041	0.044
PT_TBY (pp)	-0.002	0.000	0.001	0.001	0.001	0.001	0.000	0.000	0.000

Source: own elaboration.

Note: 500-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“

Risk premium – tangibles mechanism (overall efficiency)

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	0.056	0.087	0.125	0.176	0.236	0.549	1.009	1.587	1.789
PT_GBY (pp)	-0.038	-0.019	-0.007	-0.003	-0.001	0.009	0.018	0.009	0.001
PT_I	2.123	3.178	3.680	3.907	4.002	4.017	3.929	3.869	3.885
PT_IG	0.040	0.132	0.205	0.262	0.311	0.518	0.813	1.192	1.324
PT_IM	-0.032	0.039	0.092	0.115	0.120	0.085	0.021	-0.048	-0.070
PT_INFLATION (pp)	-0.010	-0.007	-0.010	-0.013	-0.015	-0.014	-0.009	-0.002	0.000
PT_L	0.045	0.099	0.125	0.132	0.130	0.111	0.085	0.053	0.044
PT_LHY	-0.023	0.036	0.051	0.055	0.055	0.040	0.007	-0.036	-0.050
PT_LLY	0.051	0.112	0.148	0.161	0.161	0.137	0.109	0.074	0.064
PT_LMY	0.037	0.082	0.098	0.097	0.092	0.078	0.057	0.030	0.023
PT_LRD	0.222	0.174	0.109	0.077	0.065	0.064	0.063	0.062	0.065
PT_PAT	0.016	0.035	0.044	0.049	0.051	0.057	0.064	0.067	0.081
PT_WR	-0.027	0.011	0.068	0.127	0.186	0.451	0.839	1.334	1.505
PT_WRH	0.004	0.078	0.136	0.186	0.238	0.498	0.889	1.390	1.563
PT_WRL	-0.027	-0.008	0.042	0.105	0.168	0.441	0.828	1.325	1.495
PT_WRM	-0.028	0.025	0.096	0.160	0.217	0.475	0.859	1.351	1.520
PT_Y	0.051	0.150	0.231	0.299	0.361	0.634	1.026	1.527	1.702
PT_TBY (pp)	0.015	-0.015	-0.036	-0.045	-0.046	-0.032	-0.010	0.015	0.024

Source: own elaboration.

Note: 500-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“.

Risk premium – tangibles mechanism (insolvency)

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	0.081	0.126	0.179	0.250	0.334	0.772	1.421	2.240	2.530
PT_GBY (pp)	-0.054	-0.027	-0.010	-0.004	-0.001	0.012	0.025	0.013	0.001
PT_I	2.975	4.456	5.162	5.484	5.621	5.659	5.553	5.486	5.513
PT_IG	0.054	0.183	0.287	0.367	0.437	0.728	1.143	1.680	1.870
PT_IM	-0.049	0.050	0.124	0.157	0.165	0.117	0.028	-0.068	-0.100
PT_INFLATION (pp)	-0.014	-0.010	-0.014	-0.018	-0.021	-0.020	-0.012	-0.003	0.000
PT_L	0.063	0.138	0.176	0.186	0.184	0.156	0.121	0.076	0.064
PT_LHY	-0.033	0.050	0.072	0.077	0.077	0.055	0.011	-0.050	-0.070
PT_LLY	0.071	0.156	0.208	0.227	0.227	0.194	0.155	0.106	0.092
PT_LMY	0.051	0.115	0.138	0.136	0.130	0.110	0.081	0.044	0.033
PT_LRD	0.311	0.247	0.155	0.110	0.093	0.091	0.089	0.088	0.092
PT_PAT	0.023	0.049	0.062	0.069	0.072	0.080	0.090	0.096	0.115
PT_WR	-0.039	0.014	0.094	0.178	0.260	0.633	1.178	1.881	2.126
PT_WRH	0.004	0.108	0.190	0.262	0.334	0.699	1.249	1.960	2.209
PT_WRL	-0.038	-0.012	0.058	0.146	0.235	0.617	1.164	1.867	2.112
PT_WRM	-0.040	0.033	0.133	0.223	0.304	0.667	1.208	1.904	2.147
PT_Y	0.071	0.210	0.324	0.420	0.507	0.891	1.443	2.154	2.405
PT_TBY (pp)	0.023	-0.019	-0.049	-0.061	-0.063	-0.045	-0.013	0.021	0.034

Source: own elaboration.

Note: 500-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“.

International technology linkages - FDI inflows mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	0.058	0.142	0.220	0.284	0.338	0.523	0.717	0.911	0.977
PT_GBY (pp)	0.016	0.001	0.004	0.009	0.014	0.018	0.004	0.006	0.000
PT_I	-0.215	-0.239	-0.171	-0.071	0.033	0.397	0.616	0.653	0.661
PT_IG	0.013	0.058	0.117	0.175	0.226	0.405	0.567	0.694	0.739
PT_IM	-0.034	-0.061	-0.065	-0.057	-0.046	-0.005	0.010	-0.014	-0.020
PT_INFLATION (pp)	-0.018	-0.021	-0.018	-0.015	-0.012	-0.007	-0.003	-0.001	0.000
PT_L	0.040	0.008	-0.002	-0.004	-0.003	0.000	-0.003	-0.026	-0.027
PT_LHY	-1.664	-1.640	-1.359	-1.112	-0.906	-0.282	0.076	0.114	0.113
PT_LLY	0.014	0.001	-0.008	-0.011	-0.009	-0.002	-0.004	-0.027	-0.029
PT_LMY	0.018	0.000	-0.008	-0.007	-0.005	0.000	-0.001	-0.022	-0.023
PT_LRD	7.064	5.593	4.589	3.760	3.064	0.972	-0.251	-0.530	-0.527
PT_PAT	1.999	3.731	5.183	6.407	7.437	10.598	12.490	12.871	12.884
PT_WR	0.185	0.231	0.275	0.317	0.354	0.494	0.650	0.824	0.879
PT_WRH	1.149	1.107	0.994	0.906	0.836	0.644	0.608	0.749	0.804
PT_WRL	0.060	0.136	0.202	0.257	0.305	0.478	0.655	0.833	0.888
PT_WRM	0.073	0.139	0.196	0.250	0.300	0.477	0.653	0.830	0.885
PT_Y	0.025	0.088	0.164	0.234	0.297	0.515	0.718	0.887	0.945
PT_TBY (pp)	0.011	0.024	0.026	0.023	0.018	0.001	-0.005	0.003	0.006

Source: own elaboration.

Note: 500-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“.

Entrepreneurship/self-employment mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	1.553	2.385	2.736	2.884	2.964	3.312	3.903	4.498	4.720
PT_GBY (pp)	0.165	0.602	0.822	0.861	0.802	0.285	-0.221	0.067	0.000
PT_I	0.117	1.003	1.803	2.337	2.655	3.129	3.276	3.128	3.180
PT_IG	0.472	1.182	1.675	1.974	2.165	2.711	3.222	3.385	3.564
PT_IM	-0.885	-0.846	-0.583	-0.354	-0.193	0.157	0.236	-0.110	-0.094
PT_INFLATION (pp)	-0.323	-0.148	-0.061	-0.028	-0.018	-0.018	-0.011	-0.002	0.000
PT_L	1.327	2.484	3.197	3.577	3.771	4.109	4.234	3.890	3.926
PT_LHY	0.698	1.060	1.282	1.512	1.722	2.431	2.790	2.290	2.349
PT_LLY	1.391	2.742	3.693	4.238	4.512	4.859	4.982	4.640	4.675
PT_LMY	1.244	2.161	2.576	2.733	2.812	3.112	3.232	2.907	2.943
PT_LRD	2.716	4.428	4.491	4.361	4.272	4.228	3.862	3.263	3.334
PT_PAT	0.100	0.490	0.889	1.240	1.548	2.676	3.663	3.424	3.493
PT_WR	-2.002	-2.189	-1.977	-1.770	-1.633	-1.365	-0.953	-0.330	-0.170
PT_WRH	-1.447	-0.894	-0.487	-0.328	-0.290	-0.310	-0.023	0.699	0.846
PT_WRL	-1.968	-2.525	-2.489	-2.278	-2.072	-1.681	-1.261	-0.637	-0.478
PT_WRM	-2.074	-1.937	-1.422	-1.080	-0.920	-0.704	-0.277	0.343	0.504
PT_Y	0.797	1.685	2.254	2.586	2.795	3.418	4.057	4.346	4.573
PT_TBY (pp)	0.448	0.405	0.260	0.145	0.070	-0.068	-0.099	0.029	0.022

Source: own elaboration.

Note: 500-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“.

Liquidity constraint mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	0.309	0.749	0.953	1.068	1.156	1.522	1.976	2.009	2.107
PT_GBY (pp)	2.511	2.157	1.941	1.713	1.468	0.327	-0.620	0.131	-0.001
PT_I	-0.397	-0.172	0.187	0.514	0.785	1.597	1.915	1.299	1.406
PT_IG	0.086	0.047	0.256	0.473	0.668	1.380	1.834	1.449	1.576
PT_IM	-0.092	-0.651	-0.612	-0.459	-0.303	0.232	0.368	-0.132	-0.067
PT_INFLATION (pp)	-0.156	-0.081	-0.039	-0.025	-0.021	-0.017	-0.006	-0.001	0.000
PT_L	0.251	0.346	0.626	0.909	1.156	1.949	2.167	1.435	1.533
PT_LHY	0.331	0.653	1.104	1.433	1.728	2.779	3.230	2.315	2.449
PT_LLY	0.231	0.300	0.554	0.838	1.095	1.919	2.152	1.403	1.503
PT_LMY	0.313	0.359	0.650	0.924	1.145	1.861	2.053	1.377	1.468
PT_LRD	-0.918	1.206	1.884	2.295	2.648	3.600	3.193	2.108	2.242
PT_PAT	-0.135	-0.064	0.108	0.311	0.531	1.671	2.921	2.204	2.345
PT_WR	-0.205	-0.285	-0.369	-0.431	-0.483	-0.618	-0.365	0.103	0.128
PT_WRH	-0.397	-0.688	-0.669	-0.720	-0.803	-1.094	-0.976	-0.415	-0.410
PT_WRL	-0.183	-0.200	-0.322	-0.427	-0.499	-0.637	-0.371	0.112	0.136
PT_WRM	-0.194	-0.336	-0.436	-0.471	-0.495	-0.586	-0.309	0.127	0.155
PT_Y	0.150	0.204	0.456	0.698	0.912	1.703	2.254	1.874	2.023
PT_TBY (pp)	0.036	0.275	0.247	0.178	0.114	-0.090	-0.143	0.044	0.019

Source: own elaboration.

Note: 500-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“.

School attainment (1) mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	0.141	0.260	0.361	0.459	0.555	1.076	2.267	5.870	7.272
PT_GBY (pp)	0.007	0.016	0.022	0.025	0.026	0.026	0.034	0.040	0.000
PT_I	-0.590	-0.804	-0.840	-0.789	-0.698	-0.080	1.186	4.683	4.930
PT_IG	0.070	0.140	0.212	0.288	0.367	0.797	1.749	4.567	5.540
PT_IM	-0.039	-0.066	-0.076	-0.077	-0.073	-0.046	-0.017	0.030	-0.059
PT_INFLATION (pp)	-0.033	-0.027	-0.024	-0.023	-0.023	-0.027	-0.030	-0.020	0.000
PT_L	0.001	0.013	0.032	0.058	0.084	0.203	0.387	0.746	0.659
PT_LHY	0.019	0.031	0.189	0.574	0.988	3.109	7.289	17.763	17.946
PT_LLY	-0.372	-0.704	-1.004	-1.288	-1.563	-2.906	-5.457	-11.848	-11.988
PT_LMY	0.588	1.130	1.622	2.076	2.513	4.623	8.539	18.109	18.109
PT_LRD	-0.393	-0.343	-0.153	0.395	0.940	3.192	6.473	13.812	12.756
PT_PAT	-0.039	-0.070	-0.089	-0.061	0.019	0.946	3.796	12.011	13.426
PT_WR	0.035	0.100	0.160	0.220	0.277	0.588	1.366	3.924	5.183
PT_WRH	-0.041	-0.021	-0.075	-0.288	-0.509	-1.578	-3.398	-6.863	-5.865
PT_WRL	0.264	0.469	0.647	0.823	1.002	1.964	4.064	10.538	11.826
PT_WRM	-0.407	-0.697	-0.945	-1.168	-1.389	-2.424	-4.059	-7.088	-5.941
PT_Y	0.099	0.194	0.287	0.384	0.484	1.025	2.230	5.827	7.105
PT_TBY (pp)	0.020	0.028	0.030	0.029	0.026	0.015	0.001	-0.022	0.007

Source: own elaboration.

Note: 800-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“.

School attainment (2) mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	0.069	0.128	0.180	0.229	0.279	0.552	1.202	3.380	4.248
PT_GBY (pp)	0.005	0.009	0.012	0.013	0.014	0.014	0.019	0.023	0.000
PT_I	-0.318	-0.440	-0.467	-0.447	-0.406	-0.102	0.560	2.731	2.887
PT_IG	0.036	0.071	0.106	0.144	0.184	0.407	0.924	2.641	3.246
PT_IM	-0.016	-0.030	-0.036	-0.037	-0.036	-0.026	-0.015	0.022	-0.036
PT_INFLATION (pp)	-0.016	-0.013	-0.012	-0.012	-0.012	-0.014	-0.017	-0.013	0.000
PT_L	0.001	0.006	0.015	0.028	0.041	0.103	0.205	0.444	0.387
PT_LHY	0.011	0.015	0.086	0.266	0.472	1.549	3.741	9.705	9.823
PT_LLY	-0.187	-0.355	-0.507	-0.651	-0.792	-1.486	-2.846	-6.534	-6.626
PT_LMY	0.296	0.569	0.818	1.049	1.273	2.368	4.469	10.075	10.076
PT_LRD	-0.198	-0.174	-0.089	0.164	0.437	1.594	3.360	7.791	7.138
PT_PAT	-0.019	-0.035	-0.046	-0.034	0.003	0.462	1.939	6.630	7.504
PT_WR	0.019	0.052	0.082	0.111	0.140	0.300	0.719	2.248	3.033
PT_WRH	-0.019	-0.009	-0.033	-0.132	-0.244	-0.798	-1.794	-3.944	-3.297
PT_WRL	0.133	0.235	0.324	0.412	0.502	0.987	2.068	5.607	6.388
PT_WRM	-0.203	-0.349	-0.478	-0.596	-0.712	-1.268	-2.200	-4.177	-3.428
PT_Y	0.051	0.097	0.144	0.192	0.243	0.524	1.178	3.361	4.151
PT_TBY (pp)	0.008	0.013	0.014	0.014	0.013	0.008	0.002	-0.014	0.004

Source: own elaboration.

Note: 800-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“.

School achievement mechanism

	1Y	2Y	3Y	4Y	5Y	10Y	20Y	50Y	LR
PT_EX	0.023	0.039	0.053	0.065	0.076	0.140	0.296	0.739	0.816
PT_GBY (pp)	0.001	0.003	0.005	0.006	0.007	0.008	0.008	-0.007	0.000
PT_I	-0.080	-0.109	-0.115	-0.109	-0.098	-0.026	0.137	0.608	0.557
PT_IG	0.005	0.013	0.022	0.031	0.041	0.095	0.223	0.583	0.627
PT_IM	-0.015	-0.021	-0.022	-0.022	-0.022	-0.018	-0.010	0.011	-0.006
PT_INFLATION (pp)	-0.005	-0.003	-0.003	-0.003	-0.003	-0.003	-0.004	0.003	0.000
PT_L	-0.008	-0.010	-0.011	-0.012	-0.013	-0.019	-0.035	-0.079	-0.080
PT_LHY	0.020	0.021	0.018	0.016	0.014	0.014	0.024	-0.024	0.024
PT_LLY	-0.012	-0.016	-0.019	-0.021	-0.023	-0.038	-0.069	-0.140	-0.141
PT_LMY	-0.005	-0.003	-0.002	0.000	0.000	0.005	0.012	0.009	0.005
PT_LRD	-0.056	-0.035	-0.022	-0.013	-0.006	0.011	-0.002	-0.071	-0.140
PT_PAT	-0.002	0.000	0.007	0.018	0.031	0.125	0.380	1.098	1.027
PT_WR	0.013	0.024	0.035	0.046	0.057	0.116	0.258	0.672	0.739
PT_WRH	0.005	0.025	0.043	0.060	0.075	0.154	0.330	0.795	0.856
PT_WRL	0.008	0.011	0.013	0.017	0.020	0.046	0.121	0.415	0.492
PT_WRM	0.015	0.029	0.044	0.059	0.074	0.150	0.326	0.806	0.866
PT_Y	0.010	0.021	0.033	0.045	0.057	0.124	0.286	0.738	0.799
PT_TBY (pp)	0.007	0.008	0.008	0.008	0.008	0.006	0.003	-0.005	0.000

Source: own elaboration.

Note: 800-period simulation for convergence (LR = Long run). See notes to Table “Firms’ entry cost mechanism“.

Appendix E. Long-run output effect of a 1% change in each reform variable

Expected % change in output in 50 years from 1% change in a reform variable	
	% change in Y relative to initial steady state
JUSTICE	
Financing cost mechanism - intangibles	
increase in the judges per population ratio	0.006
reduction in the courts per population ratio	0.006
Financing cost mechanism - tangibles	
increase in the judges per population ratio	0.233
reduction in the courts per population ratio	0.236
Firms' entry cost mechanism	
increase in the judges per court ratio	0.015
decrease in the courts per population ratio	0.018
decrease in the litigation rate	0.012
increase in the share of public budget for courts ICT	0.003
Allocative efficiency mechanism	
increase in the judges per court ratio	0.018
decrease in the courts per population ratio	0.022
decrease in the litigation rate	0.015
increase in the share of public budget for courts ICT	0.004
International technology linkages mechanism	
increase in the judges per court ratio	0.022
decrease in the courts per population ratio	0.022
decrease in the litigation rate	0.054
increase in the share of public budget for courts ICT	0.004
Entrepreneurship/self-employment mechanism	
increase in the overall index of pre-insolvency framework	0.402
Liquidity constraint mechanism	
decrease in the share of liquidity constrained households	0.071
EDUCATION	
Schooling attractiveness – school attainment mechanism	
decrease in the rate of early school leavers (baseline scenario)	0.144
decrease in the rate of early school leavers (low fertility rate scenario)	0.083
Schooling quality – school achievement mechanism	
increase in the PISA math score	0.601

Source: own elaboration, assuming changes in each variable alone.

Iniciativas e Medidas Legislativas

1. Iniciativas

Iniciativa	Sumário
Reunião Conselho ECOFIN 27 de janeiro de 2017	Do debate ocorrido no Conselho ECOFIN de 27 de janeiro de 2017 destacam-se os seguintes temas: • **Programa de trabalhos da Presidência Maltesa**: O Conselho discutiu o programa de trabalhos para os assuntos económicos e financeiros apresentado pela Presidência Maltesa, a qual decorrerá entre janeiro e junho de 2017. O programa abrange os seguintes temas: (i) serviços financeiros, (ii) fiscalidade, (iii) governação económica, (iv) orçamento da União Europeia, (v) investimento; • **Governação económica – Semestre Europeu de 2016**: O Conselho adoptou conclusões relativas à Análise Anual do Crescimento (Annual Growth Survey, AGS) e ao Relatório sobre o Mecanismo de Alerta (Alert Mechanism Report, AMR). O Conselho aprovou ainda um projeto de recomendação sobre a política económica da área do euro. Relativamente ao AGS, o Conselho concordou com as prioridades propostas pela Comissão Europeia de fomentar o investimento, prosseguir reformas estruturais e assegurar políticas orçamentais responsáveis. No que se refere ao AMR, o Conselho partilhou a análise feita pela Comissão, reconhecendo os progressos feitos na correção dos desequilíbrios macroeconómicos; em fevereiro, a Comissão deverá publicar "apreciações aprofundadas" da situação em 13 estados-membros (Alemanha, Bulgária, Chipre, Croácia, Eslovénia, Espanha, Finlândia, França, Irlanda, Itália, Países Baixos, Portugal e Suécia). O projeto de recomendação sobre a política económica da área do euro – que cobre a política orçamental, competitividade e produtividade, mercado de trabalho e questões sociais, União Bancária e desenvolvimento da União Económica e Monetária – será submetido ao Conselho Europeu, tendo em vista a sua adoção em março; • **Grupo de Alto Nível sobre os Recursos Próprios**: O Grupo de Alto Nível apresentou o seu relatório final, onde se recomenda: i) direcionar as despesas para as políticas da UE que possam resultar num maior valor acrescentado; ii) estabelecer novas fontes de rendimento diretamente relacionadas com a dimensão europeia; iii) complementar os cálculos relativos ao saldo orçamental líquido com análises de custo-benefício. O documento foi discutido e contribuirá para a reflexão da Comissão sobre a possibilidade de propor uma reforma do sistema de recursos próprios para o período após 2020.
Lei da Paridade Conselho de Ministros de 5 de janeiro	Proposta de lei que estabelece o regime da representação equilibrada entre mulheres e homens nos órgãos de administração e de fiscalização das empresas do setor público empresarial e das empresas cotadas em bolsa.
Direito dos valores mobiliários – Abuso de mercado Conselho de Ministros de 12 de janeiro	Proposta de lei que procede à revisão do regime sancionatório do direito dos valores mobiliários e à adaptação do mesmo ao novo enquadramento europeu do abuso de mercado, tendo em vista a proteção dos direitos e interesses dos consumidores de produtos e serviços financeiros.
Recursos hídricos Conselho de Ministros de 26 de janeiro	Foi aprovado o decreto-lei que altera o regime económico e financeiro dos recursos hídricos.
Saneamento básico	Procedeu-se à criação, por cisão, do sistema multimunicipal de saneamento de

Iniciativa	Sumário
Conselho de Ministros de 26 de janeiro	águas residuais do Tejo Atlântico e do sistema multimunicipal de saneamento da Península de Setúbal.
Pagamento Especial por Conta Conselho de Ministros de 26 de janeiro	Proposta de Lei que visa reduzir, em 2017 e 2018, o montante de imposto pago pelas pequenas e médias empresas que tenham trabalhadores assalariados, através de uma redução do montante do Pagamento Especial por Conta (PEC) por estas suportado. A redução é temporária e será aplicada enquanto não entrar em vigor uma revisão do regime simplificado de tributação em IRC para que este abranja mais empresas.
Execução orçamental Conselho de Ministros de 26 de janeiro	Projeto de decreto-lei que estabelece as normas de execução do Orçamento do Estado para 2017.
Agência para a Energia Conselho de Ministros de 26 de janeiro	Diploma que cria, de uma forma integrada, o Operador Logístico de Mudança de Comercializador (OLMC) de eletricidade e de gás natural, sendo o exercício da sua atividade assegurado pela ADENE - Agência para a Energia.

2. Seleção de Medidas Legislativas

Assunto/Diploma	Descrição
Formação Profissional na Administração Pública Decreto-Lei n.º 86-A/2016 - Diário da República n.º 249/2016, 3º Suplemento, Série I de 2016-12-29	Define o regime da formação profissional na Administração Pública.
Retribuição Mínima Mensal Garantida Decreto-Lei n.º 86-B/2016 - Diário da República n.º 249/2016, 3º Suplemento, Série I de 2016-12-29	Atualiza o valor da Retribuição Mínima Mensal Garantida (RMMG), para 2017.
Fundo de Inovação, Tecnologia e Economia Circular Decreto-Lei n.º 86-C/2016 – Diário da República n.º 249/2016, 3º Suplemento, Série I de 2016-12-29	Cria, na dependência do membro do Governo responsável pela área da Economia, o Fundo de Inovação, Tecnologia e Economia Circular.
Programa Valorizar – Programa Nacional para a Coesão Territorial Despacho Normativo n.º 16/2016, Diário da República n.º 250/2016, Série II de 2016-12-30	Abertura de Candidaturas à Linha de Apoio à Valorização Turística do Interior, que tem por objeto o apoio ao investimento a iniciativas e a projetos com interesse para o turismo, que promovam a coesão económica e social do território.
Imposto sobre os produtos petrolíferos e energéticos Portaria n.º 345-C/2016 - Diário da República n.º 250/2016, 3º Suplemento, Série I de 2016-12-30	A presente portaria atualiza o valor da taxa unitária do imposto sobre os produtos petrolíferos e energéticos aplicável no continente à gasolina sem chumbo e ao gasóleo rodoviário.
Conta Geral do Estado – Parecer do Tribunal de Contas Parecer n.º 5-A/2016 – Diário da República n.º 250/2016, 1º Suplemento, Série II de 2016-12-30	Parecer do Tribunal de Contas sobre a Conta Geral do Estado 2015.
Reservas Estratégicas de Petróleo Despacho n.º 15775-D/2016 - Diário da República n.º 250/2016, 2º Suplemento, Série II de 2016-12-30	Fixa as prestações pecuniárias suportadas pelos operadores obrigados à constituição e manutenção de reservas estratégicas de petróleo.
Contrato fiscal de investimento – Eurocast Portugal, SA	Aprova a minuta de um contrato fiscal de investimento a celebrar entre o Estado Português e a sociedade Eurocast Portugal,

Assunto/Diploma	Descrição
Resolução do Conselho de Ministros n.º 2/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	S. A., para a construção de uma nova unidade industrial de fundição de peças de alumínio a alta pressão.
Contrato fiscal de investimento – CELTEJO, SA Resolução do Conselho de Ministros n.º 3/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Aprova a minuta de um contrato fiscal de investimento a celebrar entre o Estado Português e a sociedade CELTEJO - Empresa de Celulose do Tejo, S. A., para a realização de investimentos que se irão traduzir na introdução de tecnologias inovadoras e no desenvolvimento de novos processos mais eficientes e permitir uma redução do impacto da atividade da empresa nas emissões de gases com efeitos de estufa.
Contrato fiscal de Investimento – Faurecia, Lda Resolução do Conselho de Ministros n.º 4/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Aprova a minuta do contrato fiscal de investimento a celebrar entre o Estado Português e a sociedade Faurecia - Sistemas de Escape Portugal, Lda., para a incorporação de novas tecnologias de produção mais flexíveis e eficientes e que contribuirão para veículos mais amigos do ambiente.
Contrato fiscal de Investimento – Fibope, SA Resolução do Conselho de Ministros n.º 5/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Aprova a minuta do contrato fiscal de investimento a celebrar entre o Estado Português e a sociedade Fibope Portuguesa - Filmes Biorientados, S. A., para a implementação de uma tecnologia inovadora na produção de filme biorientado.
Contrato fiscal de Investimento – Waratah, SA Resolução do Conselho de Ministros n.º 6/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Aprova a minuta de um contrato fiscal de investimento a celebrar entre o Estado Português e a sociedade Waratah, Unipessoal, Lda., para a aquisição e operação de um navio-hotel equipado com a mais recente tecnologia de navegação, comunicação e segurança, integrando soluções inovadoras em matéria de proteção ambiental e eficiência energética.
Contrato fiscal de Investimento – Celulose Beira Industrial, SA Resolução do Conselho de Ministros n.º 7/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Aprova a minuta de um contrato fiscal de investimento a celebrar entre o Estado Português e a sociedade Celulose Beira Industrial, S. A., para a instalação de uma nova linha de descasque e destroçamento de rolaria de madeira, promovendo um aumento significativo da eficiência energética e uma melhoria do processo a jusante de fabrico de pasta celulósica.
Contrato fiscal de Investimento – Groz-Beckert, Lda Resolução do Conselho de Ministros n.º 8/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Procede a ajustamentos no contrato de concessão de benefícios fiscais celebrado, em 3 de julho de 2013, entre o Estado Português e a Groz-Beckert Portuguesa, Lda.
Contrato fiscal de Investimento – Biovegetal, SA - Embraer Portugal Estruturas em Compósitos, S. A. - Embraer Portugal Estruturas Metálicas, S.A. Resolução do Conselho de Ministros n.º 9/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Procede a ajustamentos no contrato de concessão de benefícios fiscais celebrados, em 9 de agosto de 2007, entre o Estado Português e a Biovegetal - Combustíveis Biológicos e Vegetais, S. A., bem como aos contratos de concessão de benefícios fiscais celebrados, em 23 de setembro de 2008, entre o Estado Português e a Embraer Portugal Estruturas em Compósitos, S. A., e entre o Estado Português e a Embraer Portugal Estruturas Metálicas, S. A.
Contrato fiscal de Investimento – BDP - Biodinâmica Dental Products, Lda. Resolução do Conselho de Ministros n.º 10/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Declara a resolução do contrato fiscal de investimento celebrado em 12 de outubro de 2012, entre, por um lado, o Estado Português, e por outro lado a BDP - Biodinâmica Dental Products, Lda.
Contrato fiscal de Investimento – Resolução de contratos – AICEP, EPE – IAPMEI, IP Resolução do Conselho de Ministros n.º 11/2017 - Diário da República n.º 2/2017, Série I de 2017-01-03	Aprova a resolução de oito contratos de concessão de benefícios fiscais por incumprimento ou por solicitação expressa do promotor.
Emissão de dívida pública - OE 2017 Resolução do Conselho de Ministros n.º 15-A/2017 - Diário da República n.º 9/2017, 1º Suplemento, Série I de 2017-01-12	Autoriza a emissão de dívida pública, em execução do Orçamento do Estado para 2017.
IRS – Tabelas de retenção na fonte Despacho n.º 843-A/2017 - Diário da República n.º 10/2017, 1º Suplemento, Série II de 2017-01-13	Aprova as tabelas de retenção na fonte sobre rendimentos do trabalho dependente e pensões auferidas por titulares residentes no continente para vigorarem durante o ano de 2017.
Sobretaxa – Tabelas de retenção na fonte Despacho n.º 843-B/2017 - Diário da República	Aprova as tabelas de retenção na fonte da sobretaxa a aplicar aos rendimentos do trabalho dependente e pensões auferidas

Assunto/Diploma	Descrição
n.º 10/2017, 1º Suplemento, Série II de 2017-01-13	em 2017.
IRS – Tributação conjunta Lei n.º 3/2017 - Diário da República n.º 11/2017, Série I de 2017-01-16	Consagra um regime transitório de opção pela tributação conjunta, em sede de imposto sobre o rendimento das pessoas singulares (IRS), em declarações relativas a 2015 entregues fora dos prazos legalmente previstos.
Apoio ao emprego - Taxa Contributiva da Segurança Social Decreto-Lei n.º 11-A/2017 - Diário da República n.º 12/2017, 1º Suplemento, Série I de 2017-01-17	Cria uma medida excecional de apoio ao emprego através da redução da taxa contributiva a cargo da entidade empregadora.
Medida Contrato-Emprego Portaria n.º 34/2017 - Diário da República n.º 13/2017, Série I de 2017-01-18	Portaria que regula a criação da medida Contrato-Emprego, que consiste na concessão, à entidade empregadora, de um apoio financeiro à celebração de contrato de trabalho com desempregado inscrito no Instituto do Emprego e da Formação Profissional, I. P.
Contrato Fiscal de Investimento – Toyota caetano, SA Resolução do Conselho de Ministros n.º 19/2017 - Diário da República n.º 14/2017, Série I de 2017-01-19	Aprova a minuta de um contrato fiscal de investimento a celebrar entre o Estado Português e a sociedade Toyota Caetano Portugal, S. A., para a realização de investimentos que se irão traduzir na introdução de tecnologias inovadoras e no desenvolvimento de novos processos mais eficientes e permitir uma redução do impacto da atividade da empresa nas emissões de gases com efeitos de estufa.
IRS – Tabelas de retenção na fonte Declaração de Retificação n.º 55-A/2017 - Diário da República n.º 15/2017, 2º Suplemento, Série II de 2017-01-20	Declaração de retificação do Despacho n.º 843-A/2017, de 12 de janeiro, publicado no Diário da República, 2.ª série, n.º 10, de 13 de janeiro de 2017.
Contrato fiscal de investimento – Royal Óbidos, SA Resolução do Conselho de Ministros n.º 20/2017 - Diário da República n.º 15/2017, Série I de 2017-01-20	Aprova os ajustamentos no contrato fiscal de investimento celebrado, em 16 de março de 2012, entre o Estado Português e a Royal Óbidos, Promoção e Gestão Imobiliária e Turística, S. A.
Contrato fiscal de investimento – Meca-chrome Aeronáutica Unipessoal, Lda. Resolução do Conselho de Ministros n.º 21/2017 - Diário da República n.º 15/2017, Série I de 2017-01-20	Aprova a minuta de um contrato fiscal de investimento a celebrar entre o Estado Português e a sociedade Mecachrome Aeronáutica, Unipessoal, Lda., para a construção e equipamento de uma nova unidade industrial em Évora, no setor da aeronáutica, que irá permitir criar uma nova linha de produção e possibilitar o desenvolvimento de uma série de produtos fabricados com um novo processo produtivo criogénico.
Supervisão Financeira Despacho n.º 1041-B/2017 - Diário da República n.º 19/2017, 2º Suplemento, Série II de 2017-01-26	Criação de Grupo de Trabalho para a Reforma do Modelo de Supervisão Financeira.
Formação e qualificação Decreto-Lei n.º 14/2017 - Diário da República n.º 19/2017, Série I de 2017-01-26	Altera o regime jurídico do Sistema Nacional de Qualificações e define as estruturas que asseguram o seu funcionamento
Taxa contributiva a cargo da entidade empregadora Resolução da Assembleia da República n.º 11/2017 - Diário da República n.º 20/2017, Série I de 2017-01-27	Cessação de vigência do Decreto-Lei n.º 11-A/2017, de 17 de janeiro, que cria uma medida excecional de apoio ao emprego através da redução da taxa contributiva a cargo da entidade empregadora.
Política energética Portaria n.º 41/2017 - Diário da República n.º 20/2017, Série I de 2017-01-27	Estabelece o regime de remuneração da reserva de segurança prestada ao Sistema Elétrico Nacional (SEN) através de serviços de disponibilidade fornecidos pelos produtores de energia elétrica e outros agentes de mercado.
Orçamento Participativo Portugal Resolução do Conselho de Ministros n.º 25/2017 - Diário da República n.º 21/2017, Série I de 2017-01-30	Aprova os princípios técnicos, a metodologia e as regras de operacionalização do Orçamento Participativo Portugal, para o ano de 2017.

Lista de Acrónimos

Lista de Acrónimos

Siglas	Descrição
ACAP	Associação do Comércio Automóvel de Portugal
ADSE	Direção-geral de Proteção Social aos Funcionários e Agentes da Administração Pública
AL	Administração Local
AR	Administração Regional
BCE	Banco Central Europeu
BEA	*Bureau of Economic Analysis*
BGFRS	*Board of Governors of the Federal Reserve System*
BLS	*Bureau of Labour Statistic*
BP	Banco de Portugal
BT	Bilhetes do Tesouro
BVLP	Bolsa de Valores de Lisboa e Porto
CE	Comissão Europeia
CEDIC	Certificados Especiais de Dívida de Curto Prazo
CGA	Caixa Geral de Aposentações
CMVM	Comissão do Mercado de Valores Mobiliários
COGJ	*Cabinet Office Government of Japan*
DGEG	Direção-geral de Energia e Geologia
DGO	Direção-geral do Orçamento
DGT	Direção-geral do Tesouro
EPA	*Economic Planning Agency*
Eurostat	Instituto de Estatística da UE
FBCF	Formação Bruta de Capital Fixo
FMI	Fundo Monetário Internacional
FSO	Instituto Nacional de Estatística da Alemanha
GEE	Gabinete de Estratégia e Estudos do Ministério da Economia
GPEARI	Gabinete de Planeamento, Estratégia, Avaliação e Relações Internacionais do Ministério das Finanças
IEFP	Instituto de Emprego e Formação Profissional
IGCP	Instituto de Gestão do Crédito Público
IGFSS	Instituto de Gestão Financeira da Segurança Social
IHPC	Índice Harmonizado de Preços no Consumidor
INE	Instituto Nacional de Estatística
INSEE	Instituto Nacional de Estatística da França
IPC	Índice de Preços no Consumidor
IRC	Imposto sobre o Rendimento das Pessoas Coletivas
IRS	Imposto sobre o Rendimento das Pessoas Singulares
IS	Imposto do Selo
ISM	*Institute for Supply Management*
ISP	Imposto sobre os Produtos Petrolíferos e Energéticos
ISTAT	Instituto Nacional de Estatística da Itália
ISV	Imposto sobre Veículos
IUC	Imposto Único de Circulação
IVA	Imposto sobre o Valor Acrescentado
MC	*Ministry of Commerce of China*
Michigan	Universidade de Michigan
NBSC	*National Bureau of Statistics of China*
OCDE	Organização para a Cooperação e Desenvolvimento Económico
OE	Orçamento do Estado
ONS	Instituto Nacional de Estatística do Reino Unido
OT	Obrigações do Tesouro
PIB	Produto Interno Bruto
SDDS	*Special Data Dissemination Standard*
SFA	Serviços e Fundos Autónomos
SNS	Serviço Nacional de Saúde
SS	Segurança Social
UE	União Europeia
VAB	Valor Acrescentado Bruto
Yahoo	*Finance Yahoo*

Siglas	Unidades
%	Percentagem
p.p.	Pontos percentuais
p.b.	Pontos base
EUR/USD	Dólar americano por euros
EUR/GBP	Libra esterlina por euros
MM3	Médias móveis de três termos
SRE	Saldo de respostas extremas
VA	Valores acumulados
VC	Variação em cadeia
VCS	Valor corrigido de sazonalidade
VE	Valor efetivo
VH	Variação homóloga
VHA	Variação homóloga acumulada
VITA	Variação intertabelas anualizada. Refere-se a Instrumentos de Regulamentação Coletiva de Trabalho publicados desde o início do ano até ao mês em referência e com início de eficácia no respetivo ano

Notas Gerais

Unidade – unidade/medida em que a série se encontra expressa.
: representa valor não disponível.
- não se aplica.