ECONOMIC ANALYSIS

The current account balance and the oil price shock

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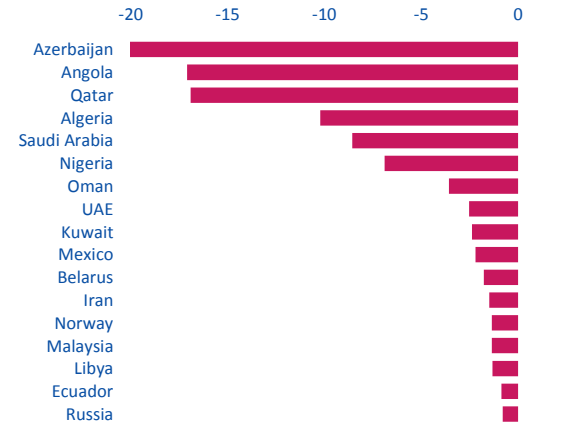
Structural and cyclical winners and losers across the World

Summary

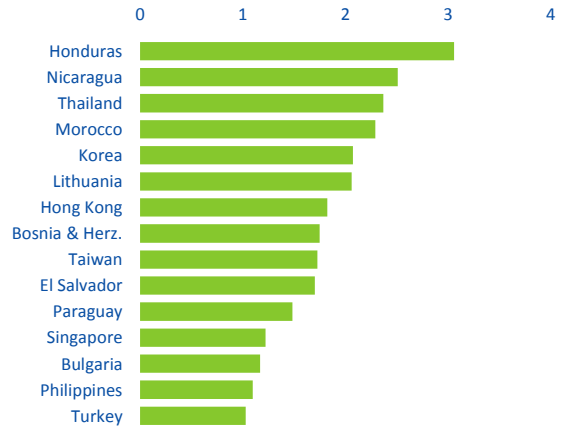
- **The slump in oil and other commodity prices since mid-2014 is having an important impact on the current account balances (CAB) across the World in both cyclical and structural terms**. While the cyclical effects are already affecting the short-term financing needs of oil exporters in particular, the structural or permanent effects of the lower oil prices will affect countries' structural balances as well. **This could eventually translate in transfers of flows from net exporters to net oil importers countries affecting both the spot exchange and the fundamental real equilibrium exchange rates as well as the thresholds for the assessment of countries vulnerabilities**.
- We use a panel data model for the structural current account (SCAB) to **estimate the effect of this new paradigm of the oil price on the structural and cyclical current account in a large group of 98 countries**. The lower oil prices are already worsening/improving the cyclical positions. While OPEC countries have lost nearly 5% of GDP of their CA surpluses, the Advanced Economies (particularly the EU periphery), EM Europe and Emerging Asia cyclical gains amount to near 0.8% of GDP on average, and their structural balances will also improve.
- According to our estimations **there could be important changes from the previous oil price paradigm with winners and losers in both cyclical and structural terms**. Azerbaijan, Angola, Qatar, Algeria, Saudi Arabia, Nigeria, Oman and UAE will suffer a deterioration of more than 5% of GDP in their SCAB in the next five years. On the contrary, oil importers from Africa (Botswana, Morocco), Emerging Asia (Thailand, Hong Kong and Philippines) and EM Europe (Turkey and Bulgaria) will be among the most benefited.

Figure 1a
Structural losers: effect on the SCAB of the oil price (change between 2020-2012, in % of GDP)



Source: BBVA Research

Figure 1b
Structural winners: effect on the SCAB of the oil price (change between 2020-2012, in % of GDP)

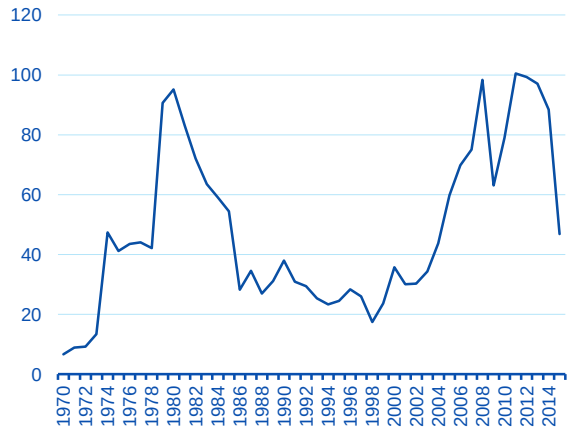


Source: BBVA Research

Change in oil price and baseline scenario for next 5 years

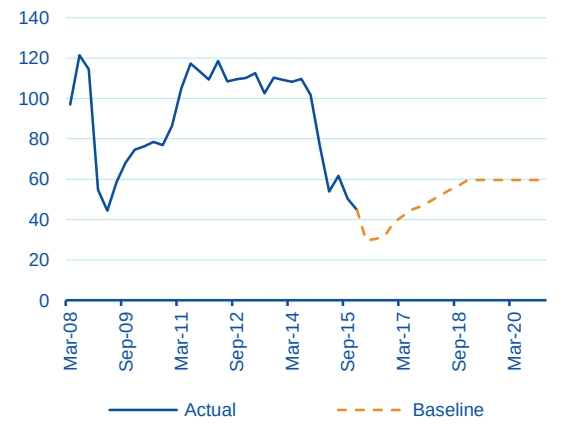
The drop of 70% in oil prices since mid-2014 ends an unprecedented 12-year period of price gains driven by sustained growth of non-OECD demand and cheap money that encouraged non-OPEC supply (Figure 2). This drop has been common to several other commodities including energy related ones such as coal and natural gas.

Figure 2
Real crude oil price: average of Brent, Dubai & WTI (2010 US$/Barrel)



Source: World Bank and BBVA Research

Figure 3
Oil price (Brent, US$/Barrel)



Source: World Bank and BBVA Research

The BBVA-Research baseline scenario for oil price implies a short-run decline of the oil price in 2016, with a gradual recovery thereafter, approaching a much lower long-term equilibrium towards 2020 than in the previous decade, as it can be seen in Figure 3. The short-run decline in 2016 and the lower medium-term equilibrium price are both going to have different effects on the current account balance of oil exporters and importers, which are the effects that we intend to estimate in the following sections.

In this economic watch we analyze the impact of the change in oil prices from 2014 to 2016 in the current account balance. **We use a model estimated in two stages. First, we estimate a panel data model based on pooled information from a sample of 98 countries. Secondly, we estimate individual country models in a Bayesian way by using the common coefficients estimated in the panel data model as priors and combining them with individual data to obtain the posterior estimates. Thus, we aim to improve the traditional panel results by accounting for local characteristics of each country**[1],[2].

1 https://goo.gl/EbJmcM, https://goo.gl/Qz1Xmc
2: In these models, the trade balance between oil exports and oil imports for a given country is one of several other determinants of the current account balance. However, in our current account model the oil price does not enter explicitly as an explanatory variable, although it is clear that the oil price is indeed the most important determinant of the oil trade balance for both exporters and importers. Thus, we first estimate the effect of the oil price on the oil trade balance for each country, according to the methodology described in Appendix 3.

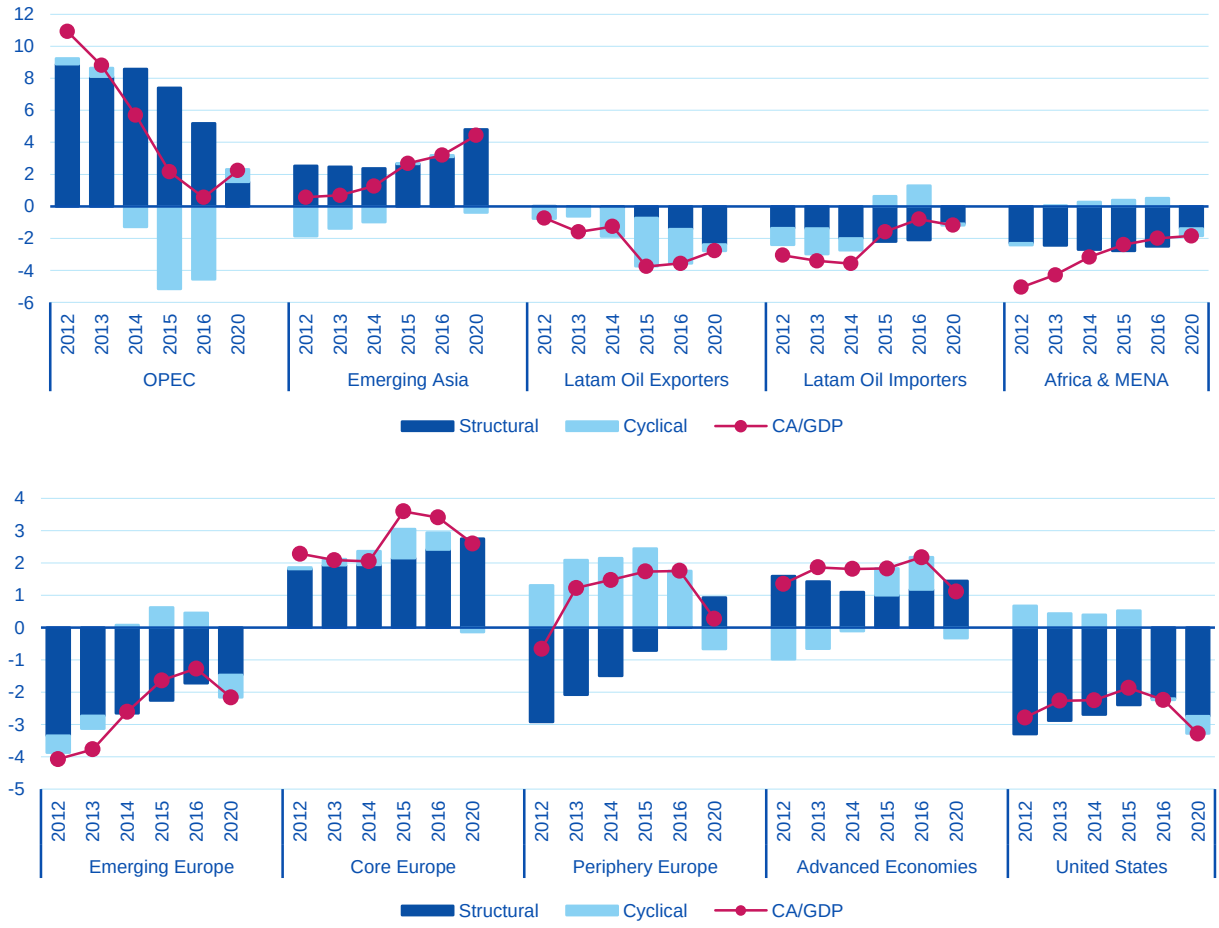
Decomposition of Current Account Balance into Long-term, Medium-term and Cyclical Components

Distinguishing between cyclical and structural current account is important because each component accounts for a different type of information. On the one hand, the cyclical current account balance is the component that places a larger pressure on foreign exchange markets and in the short-term financial needs of a country, increasing/decreasing the likelihood of a currency crisis (large depreciation plus loss of reserves). On the other hand, the structural balance tells us whether a country will accumulate either foreign assets or liabilities in a medium- and long-term horizon with a potential impact on its degree of vulnerability. (The methodology employed to estimate the structural and cyclical current account balances is explained in Appendix 4).

In order to summarize the results of the exercise, we divide the 98 countries included in the analysis in 9 regional groups (plus the US) according to their geographic and economic relationship. All the results shown throughout this document are available at a country level upon request. The regions analyzed hereafter are the following: OPEC and Other Oil Exporters, Emerging Asia, Latam Oil Exporters, Latam Oil Importers, Africa & MENA, Emerging Europe, Advanced Central Europe, Europe Periphery and non-European Advanced Economies. The key results of the decomposition of the current account balance into its cyclical and structural components (Figure 4) are the following:

- **OPEC and oil exporter's** countries will experience a sharp reduction in their structural surplus of nearly 7% of GDP towards 2020. Currently, they are **suffering large adjustments in the cyclical position in 2015 and 2016 (-5% of GDP on average).** This will be important as most of these countries have pegged (or quasi pegged) their currencies with the US dollar. In essence, the ability to maintain these pegs will diminish.
- **Oil exporters from Latin America** will also experience a deterioration in their structural deficit (from near zero balance to a structural deficit of -2.4% of GDP in 2020). The **rest of Latin America** countries (the net energy importers) will continue to maintain a structural current account deficit that will be reduced on average by nearly 1% of GDP between 2013 and 2020.
- **Most of the countries of Emerging Asia will experience a strong trend towards larger structural surpluses**. On average, the structural balance from EM Asia will increase from near 2% in 2013 to almost 5% of GDP in 2020. As the cyclical position in 2016 will be near 0%, most of the surplus is structural.
- **Emerging Europe** countries are also among the most benefited and will halve its structural deficit between 2012 and 2020 (from -3.4 to -1.5% of GDP). As these countries will enjoy a cyclical surplus of about 0.6% of GDP in 2015 & 2016, their current deficit is mainly structural.
- In the case of the Western European countries, we distinguish two groups: The Core **Central-European countries** will see an increment in their structural surplus of about 1%. of GDP between 2012 and 2020 (from 1.8 to 2.7) and they will enjoy a cyclical surplus of 0.9 points of GDP this year. The **EU Periphery will be the region with the largest change in its structural balance between 2012 and 2020**. It will go from a structural deficit of -3% of GDP to a structural surplus of 1% of GDP. They will also enjoy cyclical surpluses of 2.4% and 1.7% of GDP in 2015 and 2016 respectively.
- Among the **rest of advanced countries**, they will only experience a small change in its structural balance (from 1.6% in 2012 to 1.5% of GDP in 2020). They will nevertheless enjoy a cyclical surplus of 0.8% and 1% of GDP in 2015 and 2016. Surprisingly, the US will not see a large reduction in its structural deficit and will not even enjoy a cyclical surplus in 2016 (0.5% in 2015 and -0.04% in 2016).

Figure 4
Decomposition of current account balance into structural and cyclical components (% of GDP)



Source: BBVA Research. Note: Notice that years 2017 to 2019 are not depicted in the Graph. The values are weighted averages within each region

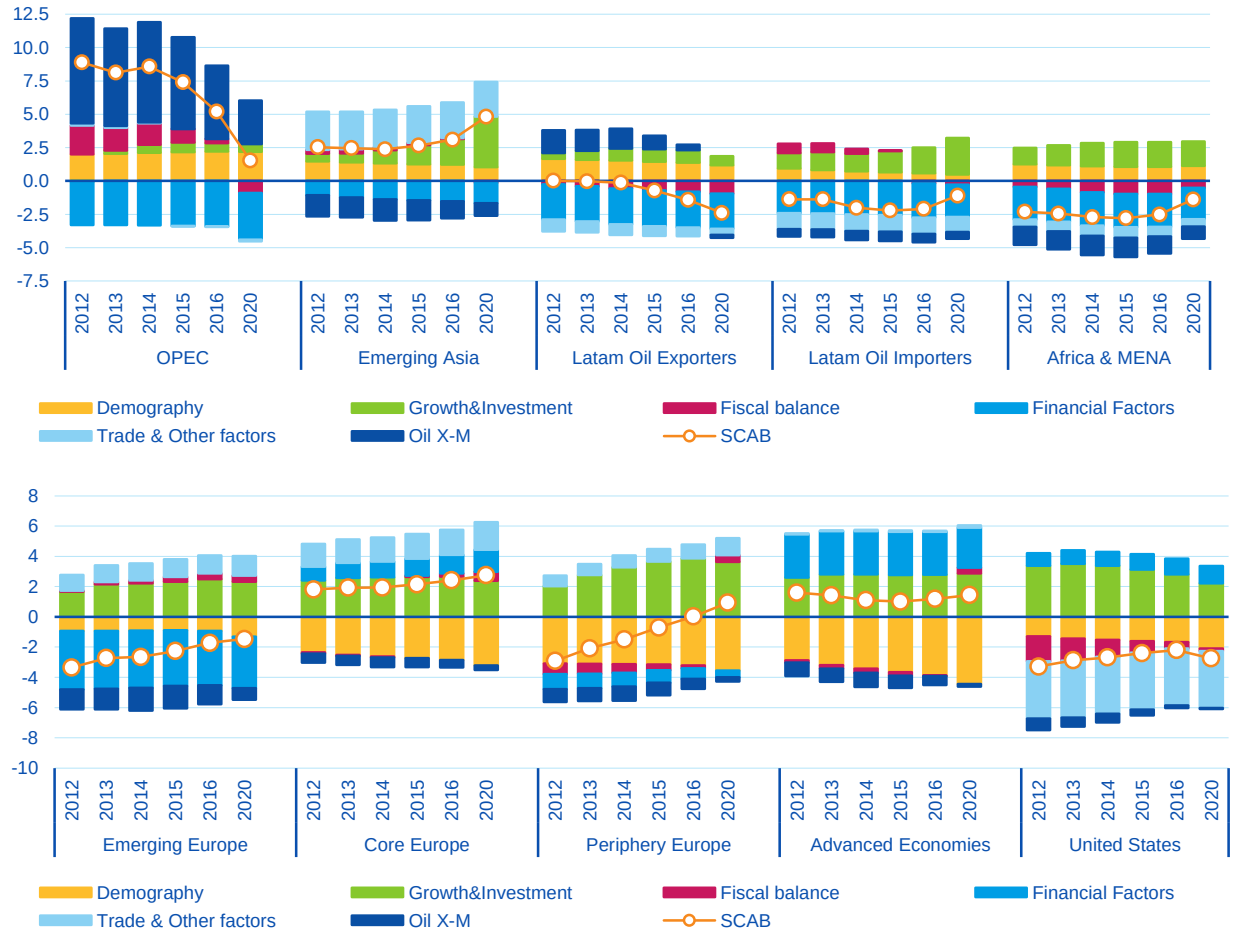
The impact of the oil price on the structural & cyclical current account shifts

We have seen that there will be important changes in both the cyclical and structural components of the current account. In this section we quantify the contribution of the changes in the oil price paradigm to these changes. In Figure 5 and 6 we can appreciate the contribution of oil price changes to shifts in the structural (SCAB) and cyclical current account balance together with other economic determinants. We can highlight the following points:

- As expected, **the oil balance is the main responsible in the change in the structural CA balance of OPEC and oil exporters between 2012 and 2020** (an adjustment of nearly 6% of GDP). This will happen **not only through the standard export channel but also through the deterioration in the fiscal account** (nearly -0.8%).
- **Oil exporters from Latam will suffer a structural drop of about 2% of GDP due to the structural loss in their oil trade balance. The fiscal balance will contribute with half a point of GDP to the total loss in their SCAB.**

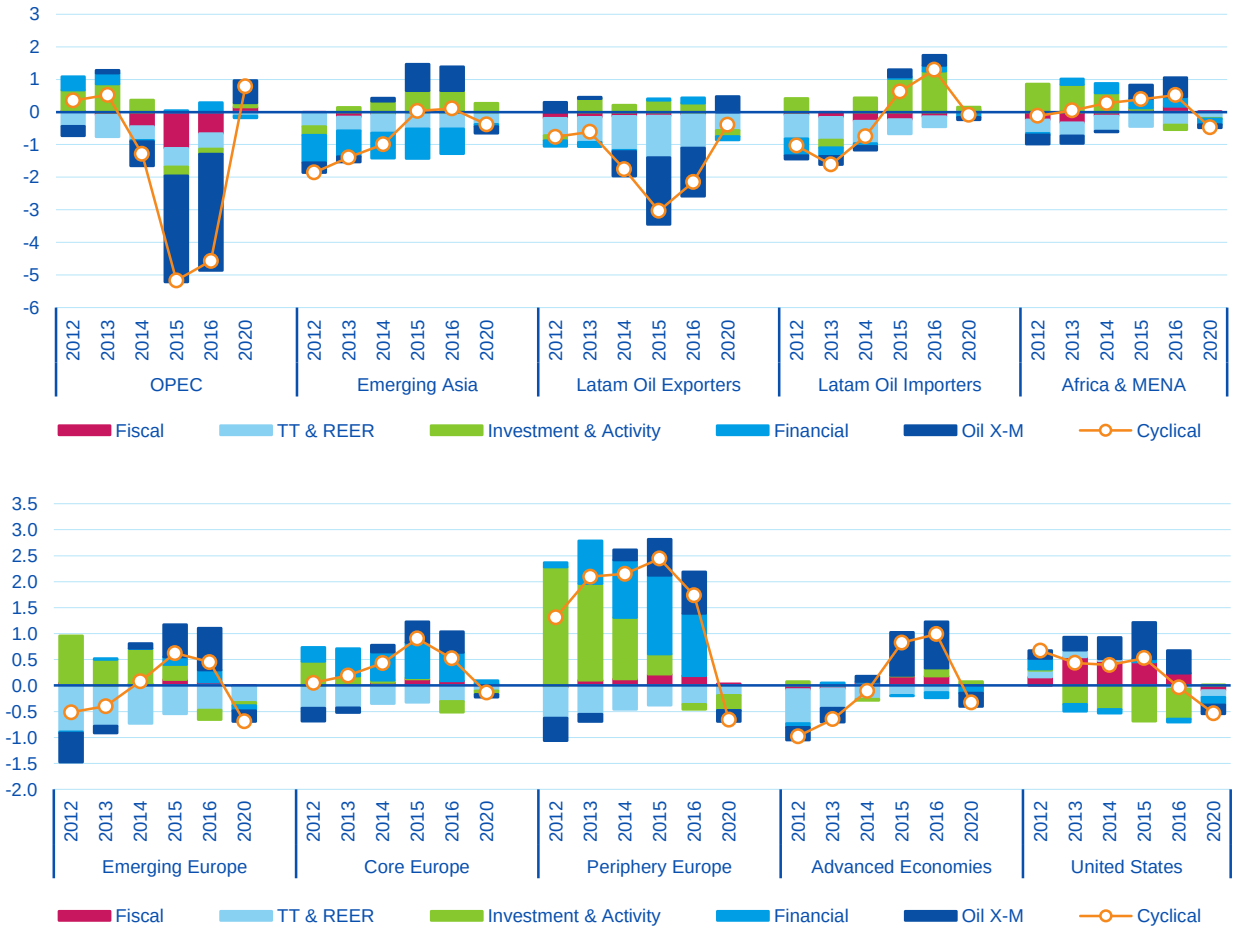
- **The most important factor to the Emerging Asia structural balance improvement between 2012 and 2020 will be the medium-term convergence of the region in terms of income per capita and the reduction of its over-investment levels relative to rest of the World, rather than the oil price.**
- **In Emerging Europe, the change in oil prices will contribute to the reduction in the structural deficit** by about -0.7% of GDP. The cyclical surplus in 2015 and 2016 will come almost entirely from the effect of the oil balance.

Figure 5
Decomposition of structural current account balance into large economic factors (% of GDP)



Source: BBVA Research. Note: Notice that years 2017 to 2019 are not depicted in the Graph.

Figure 6
Decomposition of cyclical current account balance into large economic factors (% of GDP)



Source: BBVA Research. Note: Notice that years 2017 to 2019 are not depicted in the Graph.

- **In the advanced European countries the change in its structural balance will be modest, as the slight improvement in oil will be balanced by demographic factors**. The main factor contributing to the cyclical surplus in 2015 and 2016 is not the oil balance, but the cyclical reduction in private leverage.
- **In the EU Periphery, the large increase in the structural CA will come from a combination of several structural factors: the reduction of its energy balance, a reduction of their investment relative to the rest of the World, the medium-term reduction of its fiscal deficits and the still active deleveraging process**. Although the cyclical effect of the oil price reduction is important (0.7% in 2015 and 0.8% of GDP in 2016), the cyclical effect of the deleveraging process is almost twice as large.
- **The rest of the Advanced Economies will not experience significant changes in their structural balances due to different counteracting forces**. The structural change in demographic factors contributes almost the same as the change in the contribution of the oil balance. These countries will enjoy the largest cyclical effect of the oil price (0.8% and 0.9% of GDP in 2015 and 2016).
- **In the US, the change in oil prices will not have a large structural effect**. The reduction in its fiscal deficit will have a much larger effect between 2012 and 2020.

Summing Up: Cyclical and structural winners and losers

The oil price change will have cyclical and structural effects on the current account balances across the world. There will be winners and losers and among them the positive/negative effects will be felt in an asymmetric way. First, we are and (will continue to) observe cyclical balance effects exerting pressure on foreign exchange markets and on the short-term financial needs. In Figures 7a and 7b we can see the estimated cyclical effect of the oil price change on the cyclical current account balance (through its effect on the oil trade balance). The main salient features in the cyclical position are the following:

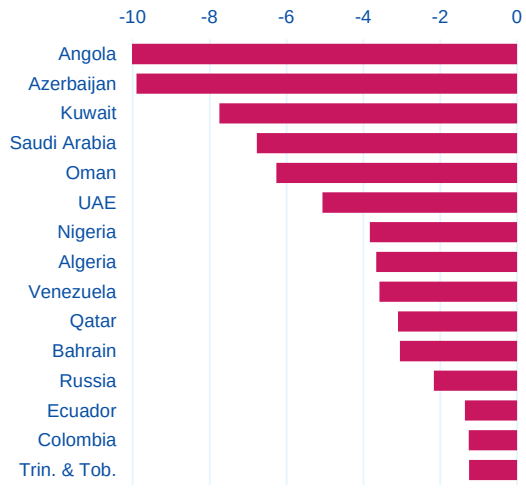
- **The most benefited countries in terms of cyclical effects this year will be Thailand, Korea, Singapore, Taiwan, Turkey, Hong Kong, Japan, India and Spain, all of which will enjoy cyclical contributions of more than 1% of GDP**.
- In terms of cyclical adjustment **the more affected in 2016 are some African countries (Angola, Nigeria and Algeria), Arabian Peninsula countries (Kuwait, Saudi Arabia, Oman, UAE, Qatar and Bahrain), Azerbaijan and Russia in Emerging Europe, and Venezuela, Ecuador, Colombia and Mexico in Latin America.** Some traditional oil exporters such as Libya and Iran are somewhat less affected because they were exporting much less oil than usual before 2015.
- **On average, the cyclical effect of the oil balance on the CA balance is -2.7% of GDP for traditional oil exporters, and 0.9% of GDP for traditional oil importers**.

Similarly, **there will be winners and losers in terms of changes in the structural CA balance** due to the long-term reduction in the oil price (lower equilibrium price in 2020).This will affect the accumulation of foreign assets/liabilities in the future due to the permanent change in the oil trade balance. This should have more permanent effects thus altering some of the equilibrium exchange rates.

In Figures 8a and 8b we can observe the change in the SCAB that is due to the change in the oil price in the medium-term. The graphs display the change in the contribution of the oil trade balance to the SCAB in 2020 compared to the SCAB in 2012. From this difference we can point out the following key points:

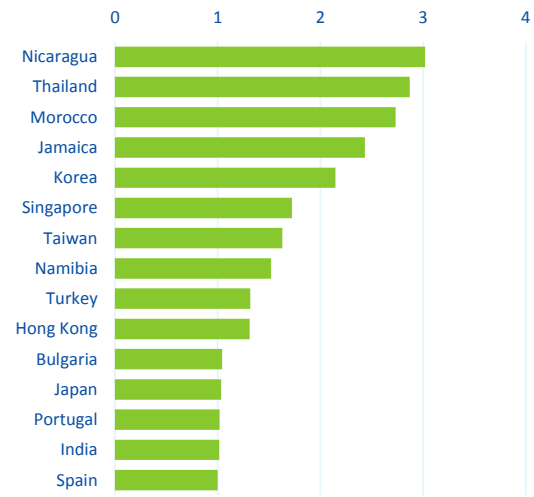
- Oil exporters evidently top the structurally damaged countries' list. **Some countries such as Azerbaijan, Angola or Nigeria will suffer sharp structural adjustments**, moving from being strong accumulators of foreign assets thanks to their oil trade balances, to net accumulators of foreign liabilities. **The strong export position of Persian Gulf countries (Qatar, Saudi Arabia, Oman, etc.) during the past will prevent these countries from becoming net dissavers, but the rate at which they accumulate foreign assets thanks to their oil exports will be largely reduced.**
- On the opposite side, **several countries such as Lebanon, Korea or Taiwan will almost reduce their structural external financial needs from oil trade to almost 0% of GDP. Other countries such as Thailand, Morocco or Turkey will reduce their structural financial needs (from their trade in oil) by more than half their structural needs in 2012.**

Figure 7a
Cyclical losers from the oil price decline (Cyclical effect on the CAB in % of GDP)



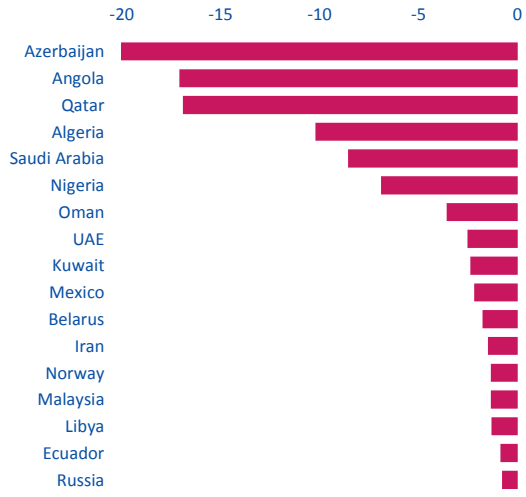
Source: World Bank and BBVA Research

Figure 7b
Cyclical winners from the oil price decline (Cyclical effect on the CAB in % of GDP)



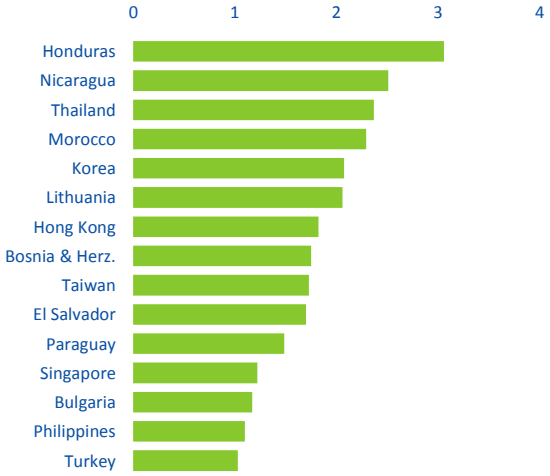
Source: World Bank and BBVA Research

Figure 8a
Structural losers from the oil price decline (Structural change between 2012-2020 in % of GDP)



Source: World Bank and BBVA Research

Figure 8b
Structural winners from the oil price decline (Structural change between 2012-2020 in % of GDP)



Source: World Bank and BBVA Research

In Appendix 2 we show the complete lists of countries according to the estimated effects of the oil price change on the cyclical (Table 1) and structural (Table 2) current account balances.

Appendix 1

List of countries included within each region

The values for each group shown throughout this document represent a weighted average within each region, with the weights given by the share of each country's GDP on the total group GDP (in PPP US$).

- **OPEC and Other Oil Exporters**: Algeria, Angola, Azerbaijan, Bahrain, Iran, Kuwait, Libya, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia and United Arab Emirates
- **Emerging Asia**: Bangladesh, China, Hong Kong, India, Indonesia, Malaysia, Myanmar, Pakistan, Philippines, Sri Lanka, Taiwan, Thailand and Vietnam.
- **Latam Oil Exporters**: Colombia, Ecuador, Mexico, Trinidad & Tobago and Venezuela.
- **Latam Oil Importers**: Argentina, Bolivia, Brazil, Chile, Costa Rica, Dominican Rep., El Salvador, Guatemala, Honduras, Jamaica, Nicaragua, Panama ,Paraguay, Peru and Uruguay.
- **Africa & MENA**: Botswana, Cameroon, Egypt, Israel, Lebanon, Morocco, Namibia, South Africa and Tunisia
- **Emerging Europe**: Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Rep, Slovenia, Turkey, Ukraine
- **Core Europe**: Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, Netherlands, Sweden and United Kingdom.
- **Periphery Europe**: Greece, Ireland, Italy, Malta, Portugal and Spain
- **Advanced Economies**: Australia, Japan, Korea, Singapore, Canada, Iceland, New Zealand and Switzerland.

Appendix 2

List of countries according to the impact of the oil price change

Table 1
Short-term contribution of oil balance to the cyclical current account in 2016 (% of GDP)

Harmed countries			Mildly benefited countries			Highly benefited countries		
1	Angola	-11.5	31	UK	0.0	69	Pakistan	1.0
2	Azerbaijan	-9.9	32	Bangladesh	0.0	70	Luxembourg	1.0
3	Kuwait	-7.7	33	Romania	0.0	71	Guatemala	1.0
4	Saudi Arabia	-6.8	34	Slovak Rep	0.1	72	Spain	1.0
5	Oman	-6.3	35	Denmark	0.1	73	India	1.0
6	UAE	-5.1	36	Indonesia	0.2	74	Portugal	1.0
7	Nigeria	-3.8	37	Australia	0.3	75	Cyprus	1.0
8	Algeria	-3.7	38	Myanmar	0.3	76	Japan	1.0
9	Venezuela	-3.6	39	France	0.3	77	Sri Lanka	1.0
10	Qatar	-3.1	40	Brazil	0.3	78	Bulgaria	1.0
11	Bahrain	-3.0	41	Chile	0.4	79	Latvia	1.1
12	Russia	-2.2	42	Armenia	0.4	80	Paraguay	1.1
13	Ecuador	-1.4	43	Netherlands	0.4	81	Iceland	1.2
14	Colombia	-1.3	44	Estonia	0.4	82	Hong Kong	1.3
15	Trin. & Tob.	-1.3	45	USA	0.4	83	Turkey	1.3
16	Mexico	-1.1	46	Sweden	0.5	84	El Salvador	1.4
17	Norway	-1.1	47	South Africa	0.5	85	Namibia	1.5
18	Libya	-0.9	48	New Zealand	0.5	86	Taiwan	1.6
19	Cameroon	-0.9	49	Finland	0.5	87	Bosnia & Herz.	1.7
20	Malaysia	-0.9	50	Bolivia	0.6	88	Singapore	1.7
21	Canada	-0.6	51	Switzerland	0.6	89	Lithuania	1.8
22	VietNam	-0.6	52	Israel	0.6	90	Malta	1.9
23	Belarus	-0.4	53	Italy	0.6	91	Honduras	2.0
24	Ukraine	-0.2	54	China	0.6	92	Korea	2.1
25	Peru	-0.2	55	Germany	0.7	93	Jamaica	2.4
26	Croatia	-0.1	56	Ireland	0.7	94	Botswana	2.6
27	Egypt	0.0	57	Austria	0.7	95	Morocco	2.7
28	Iran	0.0	58	Belgium	0.7	96	Thailand	2.9
29	Tunisia	0.0	59	Panama	0.7	97	Lebanon	3.0
30	Argentina	0.0	60	Uruguay	0.7	98	Nicaragua	3.0
			61	Dominican Rep	0.8			
			62	Philippines	0.8			
			63	Czech Rep.	0.8			
			64	Slovenia	0.8			
			65	Costa Rica	0.9			
			66	Poland	0.9			
			67	Hungary	0.9			
			68	Greece	0.9			

Source: BBVA Research

Table 2
Loss/Gain in structural current account balance in 2020 vs. 2012 due to the lower oil balance (% of GDP)

Harmed countries			Mildly benefited countries			Highly benefited countries		
1	Azerbaijan	-27.3	34	Slovenia	0.0	67	Latvia	0.7
2	Angola	-17.1	35	UK	0.0	68	Costa Rica	0.8
3	Qatar	-16.9	36	Chile	0.0	69	Hungary	0.8
4	Algeria	-10.2	37	Ukraine	0.0	70	China	0.8
5	Saudi Arabia	-8.6	38	Bangladesh	0.1	71	Dominican Rep	0.8
6	Nigeria	-6.9	39	Slovak Rep	0.1	72	Sri Lanka	0.8
7	Oman	-3.6	40	New Zealand	0.1	73	Poland	0.9
8	UAE	-2.5	41	Brazil	0.1	74	Guatemala	0.9
9	Kuwait	-2.4	42	Australia	0.2	75	Pakistan	0.9
10	Mexico	-2.2	43	Croatia	0.2	76	Uruguay	0.9
11	Belarus	-1.8	44	Portugal	0.2	77	Turkey	1.0
12	Iran	-1.5	45	France	0.2	78	Iceland	1.0
13	Tunisia	-1.5	46	Czech Republic	0.3	79	Luxembourg	1.0
14	Norway	-1.4	47	VietNam	0.3	80	Philippines	1.1
15	Malaysia	-1.4	48	Panama	0.4	81	Bulgaria	1.2
16	Libya	-1.3	49	Belgium	0.4	82	Singapore	1.2
17	Ecuador	-0.9	50	Cyprus	0.4	83	Paraguay	1.5
18	Russia	-0.8	51	Netherlands	0.4	84	Malta	1.7
19	Bahrain	-0.8	52	South Africa	0.4	85	El Salvador	1.7
20	Colombia	-0.7	53	India	0.4	86	Taiwan	1.7
21	Indonesia	-0.6	54	Germany	0.5	87	Bosnia & Herz.	1.7
22	Estonia	-0.6	55	Spain	0.5	88	Hong Kong	1.8
23	Argentina	-0.6	56	Bolivia	0.5	89	Lithuania	2.1
24	Cameroon	-0.6	57	Israel	0.6	90	Korea	2.1
25	Armenia	-0.5	58	Sweden	0.6	91	Morocco	2.3
26	Romania	-0.3	59	Finland	0.6	92	Thailand	2.4
27	Denmark	-0.3	60	Austria	0.6	93	Namibia	2.4
28	Canada	-0.3	61	Greece	0.6	94	Nicaragua	2.5
29	Egypt	-0.2	62	Switzerland	0.7	95	Botswana	2.6
30	Venezuela	-0.2	63	Japan	0.7	96	Honduras	3.1
31	Myanmar	-0.1	64	Italy	0.7	97	Jamaica	3.1
32	Peru	-0.1	65	United States	0.7	98	Lebanon	3.5
33	Trin. & Tob.	-0.1	66	Ireland	0.7			

Source: BBVA Research

Appendix 3

Estimation of the effect of the oil price on the oil trade balance

The oil trade balance of a country is defined as the difference between the value of oil exports and of oil imports as a percentage of its GDP. The oil trade balance depends on the volume of oil produced by each country, on its own internal demand, and on the international and the local prices of oil. However, we do not have information on the amount produced or demanded by every country for such a large group of countries as the one analyzed here. Therefore, we have to assume that most of this information is captured by each country's own sensitivity to the price of oil.

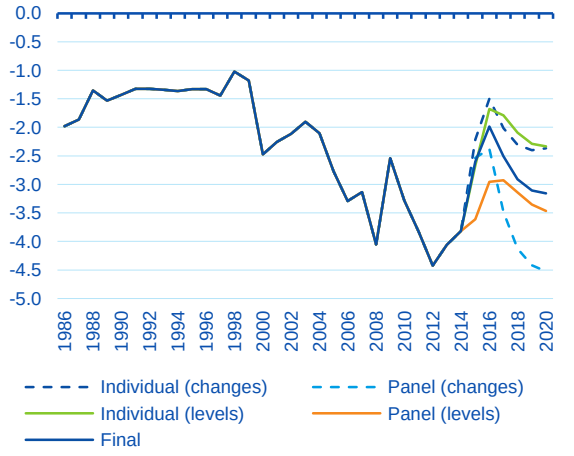
Due to different reasons we estimate four different types of models to form a final forecast. All four models include the same explanatory variables, but they differ on whether they are expressed in levels or in changes, and on whether the model is estimated individually for each country or in a pooled sample. The dependent variable is the oil balance (%GDP) and the explanatory variables are: i) the lagged oil trade balance; ii) the real price of oil; and iii) the relative real income per capita. The relative income per capita is calculated as each country's deviation from the World's average income. GDP per capita is measured in PPP terms, and in real US dollars.

Our final prediction for the oil balance comprises a weighted average of the four predictions coming from the four different models. The weight that is assigned to each model's prediction is estimated as the inverse of a mean square error of prediction. The error of prediction is estimated as the difference between the prediction made by each model for the year 2016 and the actual oil balance value in the year 2002, which corresponds to the year in which the oil price was closer to its expected value in 2016. We also estimate a similar error of prediction for the difference between the years 2020 vs. 2005.

The first model is a simple regression for each one of the 98 countries of the sample. However, since some countries have a very short data history, we also estimate a panel data regression. But since we do not have information on the volume produced or consumed by each country, we separate all countries into four different groups according to their historical oil balance average, and we estimate four different panel regressions, one for each group.

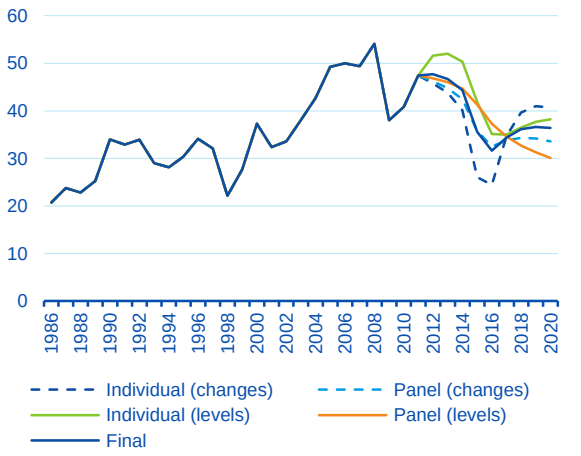
In Figures 9 and 10 we show a couple of examples of how we obtain our final prediction for the oil trade balance from the four different model specifications that are estimated for each country. In the graphs we can observe the actual oil trade balance for two different countries (one exporter and one importer), which is denoted as "Final". The actual observed data goes up until 2014 or 2015 in most cases (in some cases we only have data up until 2012). Afterwards we can observe the different paths predicted by each one of the four alternative models and the "final" weighted average of the predictions.

Figure 9
Oil trade balance (%GDP) Spain: Actual, different forecasts and final forecast



Source: BBVA Research

Figure 10
Oil trade balance (%GDP) Saudi Arabia: Actual, different forecasts and final forecast



Source: BBVA Research

Appendix 4

Modeling and decomposing the current account balance

The methodology used for estimating the structural and cyclical current account balance and its determinants is fully explained in the Economic Watch "*An analysis of the performance and the determinants of the current account in Spain*" that can be found here: https://goo.gl/EbJmcM.

In our Current Account Model, each explanatory variable is broken-down into three components depending on their frequency of oscillation, i.e. long-term, medium-term and short-term, and further, we allow each of them has its own estimated effect on the observed current account to GDP ratio. The estimated model is, thus, as follows:

$$CC_{it} = \bar{X}_i'\beta_{LT} + (\bar{X}_{it}^{MA5y} - \bar{X}_i)'\beta_{MT} + (X_{it} - \bar{X}_{it}^{MA5y})'\beta_{ST} + Z_{it}'\varphi_{CYC} + \delta_i + u_{it}, \quad (1)$$

where CC_{it} is the actual current account to GDP ratio; $\bar{X}_i$ includes the long-term average of each explanatory variable (measured according to the historical average of each country) and β_{LT} is the long-term coefficient vector associated with these averages; $(\bar{X}_{it}^{MA5y} - \bar{X}_i)$ represents the medium-term deviation of the explanatory variables vs their long-term values (5Y moving average vs. average over time by country) and β_{MT} is the medium-term coefficient vector; $(X_{it} - \bar{X}_{it}^{MA5y})$ represents the deviation of the observed explanatory variables vs their medium-term average (actual value vs. 5Y moving average) and β_{ST} is the short-term coefficient vector; Z_{it} is a vector of purely cyclical explanatory variables and φ_{CYC} is the corresponding coefficient vector.

Through this model we are not only able to decompose the current account ratio of each country into its structural and cyclical component, but we are also able to decompose *each component* into their own determinants, which are given by the long- and medium-term effects of the explanatory variables for the structural component, and the short-term effects in the case of the cyclical component.

Thus, we are able to estimate the contribution of the oil trade balance to the present and future current account balance and decompose it into its structural and cyclical contributions.

One of the main advantages of our methodological strategy is that although the cyclical and structural components of any variable could be estimated through some often used filters such as the Hodrick-Prescott filter, we are also able to further break-down the estimated components into their economic determinants, something that is not possible with the alternative methodologies.

Through this methodology, the fitted value of the structural current account is obtained using the long- and medium-term components of the explanatory variables and their corresponding estimated effect.

The model is estimated in a panel data of 92 countries for the period 1980-2014 containing 1,973 observations. The database is constructed using IMF-WEO, World Bank, UN, OECD, Darvas (2012) and BBVA Research data. All the variables are expressed in terms of deviations from its respective global average, except for the dependent variable, the initial NIIP, the oil trade balance and variations in the exchange rate, as in these cases the global average would be zero. The estimation is made using feasible generalised least squares (FGLS) and the variance-covariance matrix is adjusted to correct for heteroskedasticity and autocorrelation of residuals.

Subsequently, the estimation of the short- and medium-term coefficients resulting from the panel data approach is adapted to the each one of the 92 countries. Specifically, these coefficients are re-estimated using a Bayesian time-series model designed for each country. In particular, the Bayesian model uses the short- and medium-term coefficients obtained from the panel data model, as well as their distribution, as

priors for the Bayesian estimation. The long-term coefficients estimated through the panel data model remain unchanged.

Table 3 shows that most of the results obtained from the panel data model are in line with the economic literature, albeit the methodology used in this report allows a different response of each variable in the long and medium-term (structural effect) and the short-term (cyclical effect).

Table 3
Current account models: Panel data model estimation results

	Panel Data Model Estimation		
Explanatory variables	**Long-term**	**Mid-term**	**Short-term**
Old dependency ratio (population older than 65 years old as % of population between 15- 64 years old)	-0.12**	-0.23***	
Population Growth (%)	0.81**	-0.52***	
Public Health Expenditure (%GDP)		-0.84***	-0.53***
Investment (%GDP)	-0.12**	-0.54***	-0.61***
GDP per cppita (log USD ajustados-PPA)		3.55***	
Fiscal Balance (%GDP)	0.257***	0.295***	0.117***
Private Credit (%GDP)	0.038***	-0.02***	-0.066***
Initial NIIP (%GDP)	0.024***	0.001	0.010**
Short-term interest rate		-0.029*	0.002
Trade openness (exports and imports as % of GDP)	0.034***	0.035***	0.014*
Oil balance (%GDP)	0.220***	0.645***	0.707***
Output gap (difference between observed and potential GDP as % of potential GDP)			-0.067***
Terms of trade (% change)			0.013***
Terms of trade (% chante in t-1)			0.012***
Real effective exchange rate			-0.018***
Interest rate in USA (%)			0.100***
VIX (% change)			0,012**
		Observations: 1973	
		R-squared = 0,82	

Notes: ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively. The estimations include only a cyclical effect of the last six explanatory variables. The panel data model is estimated through FGLS. In the Bayesian estimation it is assumed that the long-term coefficients estimated in the panel data model remain unchanged.
Source: BBVA Research

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