



Sudden Influxes of Resource Wealth to the Economy: Avoiding “Dutch Disease”

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Dutch Disease is a condition in which a sudden increase of resource wealth from an extractive sector (such as oil, gas, coal, or mining) undermines other areas of the economy (such as agriculture, manufacturing, or tradeable services), shrinking them while spurring an appreciation in the real exchange rate. Although this may have some positive effects in the short run, Dutch Disease episodes can potentially lead to sectoral concentration and lower economic growth in the long run. This policy brief takes a systematic look at this macroeconomic phenomenon, collects evidence for 83 countries from 1998 to 2017, and summarizes policies that aim to prevent or mitigate Dutch Disease and some of its effects. A long-term perspective to prevent excessive dependence on natural resources and promote broad-based growth should include improvements in institutional governance of natural resource wealth, development of the financial sector to provide risk management products, and diversification of the economy through selective taxes and provision of public goods.

What Is Dutch Disease and Why Does It Matter?

A peculiar thing happened to the Dutch economy following the discovery of a giant natural gas field in 1959. As exports of natural gas soared, the Dutch manufacturing sector started to decline. This resource-led boost, along with the simultaneous real exchange rate appreciation and the consequent decline in competitiveness in tradable non-resource sectors, caught the attention of journalists, academicians, and policy practitioners. The condition, dubbed “Dutch Disease,” has occurred around the world in a variety of advanced and developing economies.

Indeed, researchers have identified features of Dutch Disease in Britain in the 1970s following the discovery of North Sea oil (Forsyth and Kay 1980) and in Australia in the 1850s following its first gold rush (Maddock and McLean 1983). The theoretical and empirical work related to Dutch Disease emerged in the late 1970s and early 1980s, driven by contemporaneous energy price shocks and concerns about the capacities of resource-based countries and member-nations of the oil cartel to properly manage oil and gas revenues. Early prominent studies include Cremer and Weitzman (1976); Nordhaus, Houthakker, and Sachs (1980); Buiters and Purvis (1980); and Bruno and Sachs (1982).

While the types and effects of Dutch Disease vary, the literature has reached a consensus on its definition. The condition has three almost simultaneous characteristics (Corden 1984, Van der Ploeg 2011). First, the economy faces a relative sudden infusion of wealth driven by a boom of the natural resource sector. Second, the real exchange rate appreciates. Third, the rest of the trading sectors contract: the appreciation of the real exchange rate makes nonresource industries less competitive.

The effects of Dutch Disease are complex—and this intricacy has to do with the nature of the boom in the extractive industries. The increase in extractive activities at the national level has four primary sources, which may occur singly or in combination: 1) a rise of global resource commodity prices, driven by supply or demand forces; 2) substantial investments, possibly related to significant increases in potential and proven reserves; 3) an increase in labor—possibly through migration—in the resource sector; and 4) productivity improvements in the processes related to resource production (Corden 1984).

While not all economies facing a sudden influx in natural resource wealth suffer from Dutch Disease, if the structure of the economy becomes more concentrated in extractive activities, the nonextractive sectors could weaken in the short term and eventually collapse, with long-lasting detrimental effects.

Recent Episodes

Proper identification of Dutch Disease episodes consists of tracking the growth rates of three macroeconomic variables: gross value added share of the extractive sector; the real exchange rate; and the gross value added share of the lagging (non-resource export) sector. Specifically, Dutch Disease occurs in an economy if there is an increase of the gross value added in the extractive sectors, an appreciation of the real exchange rate of the economy, and a shrinking of the gross-value added in the tradeable non-resource industries. For the identification of Dutch Disease episodes in this brief, the observed changes in these variables, and not necessarily their severity, are taken into account.

Dutch Disease can happen in both resource-based economies (here, called resource-output-oriented countries, ROCs) and non-resource-based economies (non-resource-output-oriented countries, NROCs). Figure 1 identifies 67 Dutch Disease episodes in both resource-based and non-resource-based economies from 1998 to 2017.

While resource-based economies have a fewer absolute number of Dutch Disease episodes, they have a higher percentage relative to the number of countries in the study sample. Of the 9 resource-based economies in the sample data, two-thirds (6) had episodes of Dutch Disease in 1998–2017, compared to less than half (32) of the 74 non-resource-based countries. There is a positive association between Dutch Disease episodes and the increase in the price of the extracted commodities in more than 90 and 78 percent of the cases in resource-based and non-resource-based economies, respectively.

Short-Term Effects: Possible Gains

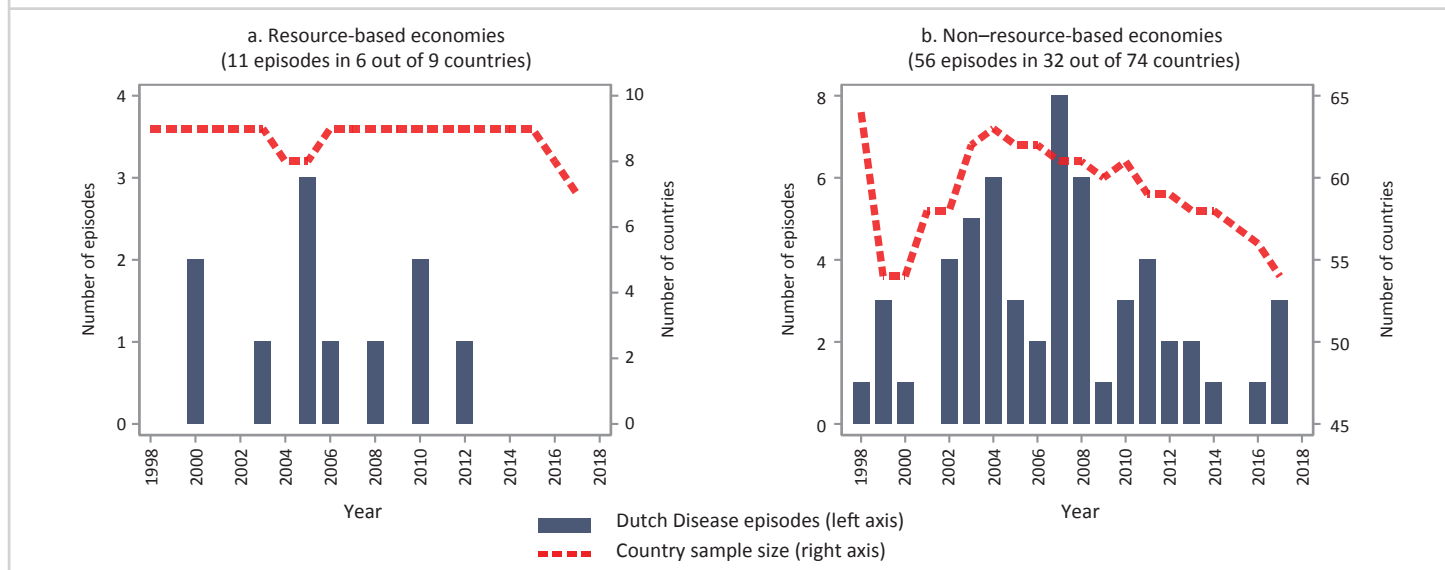
The Dutch Disease literature has highlighted strong associations between Dutch Disease episodes and a variety of macroeconomic variables. Examples include the performance of nontraded sectors; overall economic growth; the balance of payment components; external debt; inflation; regional migration; unemployment in

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Figure 1. Sixty-seven episodes of Dutch Disease from 1998 to 2017 have been identified



Source: World Development Indicators consulted in February 21, 2020, World Bank Pink Sheet, and author’s calculations.

Note: The figure is based on 1,356 annual cross-country observations from 1998 to 2017. The left vertical axis refers to the number of Dutch Disease episodes in a specific year. The right vertical axis corresponds to the number of countries in the sample. The sample includes 9 resource-based economies and 74 non-resource-based economies. Among the 9 resource-based economies, only 6 had Dutch Disease episodes. These 6 had 11 Dutch Disease episodes in 1998–2017. Among the 74 countries identified as non-resource-based economies, only 32 had Dutch Disease episodes. These 32 countries had 56 Dutch Disease episodes in 1998–2017.

non-resource sectors; booming of the government sector; and deindustrialization and deagriculturalization.

Table 1 shows frequencies with large values (exceeding 50 percent) that suggest a likely association between the Dutch Disease episodes and the direction of four selected variables across most country groups in 1998–2017. When Dutch Disease episodes happened, in most cases external debt decreased, while investment, nontraded value added, and overall gross value added expanded.

Figure 2 indicates that, in the 1998–2017 sample, most resource-based economies and non-resource-based economies that had Dutch disease episodes increased their total gross value added in the short and medium terms (from less than a year to 10 years) prior to and after the episode.

Long-Term Effects: Potential Losses

Dutch Disease is a process of economic concentration in the trading

sectors in favor of extractive industries. However, if an economy continues to increase its export concentration in primary activities, such as the extractive industries, the overall economy becomes more exposed to abrupt changes in commodity prices: that is, fluctuations in the terms of trade (Hesse 2008). Theoretically and empirically, the literature shows that a resource windfall leads to higher export concentration, with countries with larger shares of natural resources exports having a smaller share of non-resource exports in their export baskets (Bahar and Santos 2018). In the presence of high levels of export concentration, the effects of Dutch Disease will exacerbate an intensity in resource-based activities, which can potentially lead to adverse growth effects in the overall economy (Lederman and Maloney 2007).

For instance, experiences in recent decades show that countries that do not have a diversified export base when facing commodity price shocks have more fragile financial sectors. Specifically, commodity price shocks actively undermine the development of the

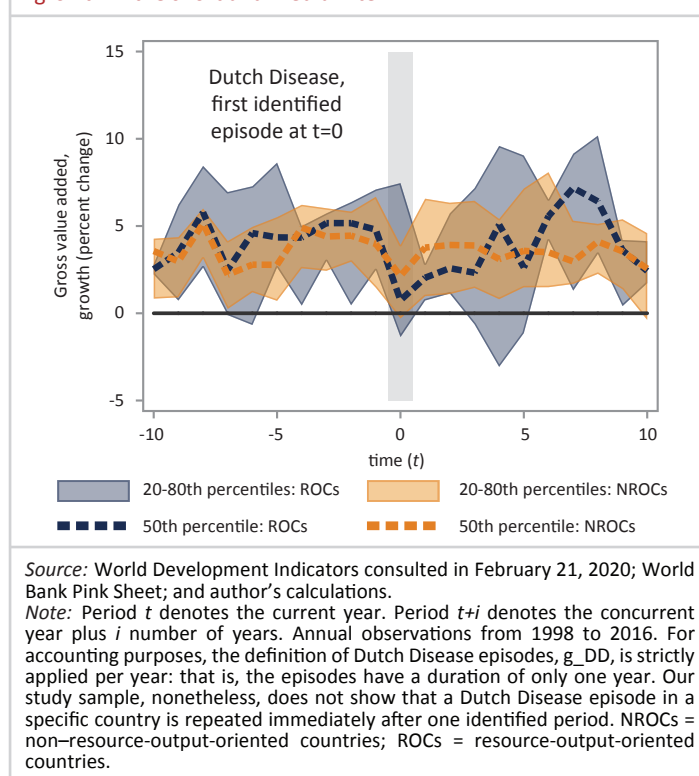
Table 1. Dutch Disease episodes and associated decreases in external debt and increases in investment, nontraded value added, and overall gross value added

Country Groups	Dutch Disease episodes and the frequency of			
	external debt contractions	gross fixed capital formation expansions	nontraded value added expansions	economy-wide gross value added expansions
All	0.66	0.53	0.78	0.73
ROCs	0.78	0.71	0.60	0.50
NROCs	0.63	0.51	0.81	0.78
LICs	0.83	0.58	1.00	0.83
LMCs	0.71	0.67	0.71	0.82
UMCs	0.50	0.59	0.74	0.58
HICs	(*)	0.31	0.75	0.75

Source: World Development Indicators consulted in February 21, 2020; World Bank Pink Sheet; and author’s calculations.

Note: The 2017 observations are not included because the information is not consistently available for that year for the external debt variable. The nontraded sector includes utility, construction, and services activities (ISIC Rev. 3.1, codes 38–45, and 50–99). The nontraded sector gross value added is in 2010 constant US dollars. HICs = high-income countries; LICs = low-income countries; LMCs = lower-middle-income countries; NROCs = non-resource-output-oriented countries; ROCs = resource-output-oriented countries; UMCs = upper-middle-income countries. (*) No external debt data available for this calculation.

Figure 2. Dutch Disease is associated with positive economic growth in the short and medium term



financial sector in resource-dependent countries. A one standard deviation increase in commodity price shocks leads to a decline in bank credit to the private sector by 0.47 percent of GDP, bank deposits by 0.49 percent of GDP, and 0.56 percent of GDP for bank liquid liabilities, Mlachila and Ouedraogo (2019) find.

Although Dutch Disease episodes do not seem to hamper economic growth in the short and medium term (figure 2), a growing concentration of resource-based exports increasingly expose the overall economy to fluctuations in the terms of trade, making economic growth more difficult to attain or sustain in the long term (Sachs and Warner 2001). Countries with substantial governance issues, including corruption, can suffer adverse long-term effects on output per capita after booms in the prices of extractive commodities, Collier and Goderis (2012) find. If global history repeats itself, both low levels of economic growth and resource concentration can pass through in the form of considerably more uncertainty and less likelihood to reduce poverty and sustain equitable growth (Mendez Ramos 2019).

Policy Responses

Given the potential adverse cyclical and structural consequences of Dutch Disease events, the phenomenon should be treated with care, and policies that mitigate and prevent it should be deployed. Mitigation policies focus on the cyclical implications of Dutch Disease, but have both short-term and long-term dimensions. For instance, fiscal policy can be implemented in the short term only if fiscal space has been accumulated over the long term. Preventive procedures target the structural effects of Dutch Disease with a more long-term perspective.

Mitigation Policies

Mitigation policies aim to relieve undesired second-round effects of Dutch Disease, yielding solutions for the overall economy in the short

term. Instruments from monetary, exchange rate, financial, and fiscal policies can play a vital role in smoothing Dutch Disease episodes and their short-term consequences.

A substantial body of literature emphasizes that monetary and exchange rate policies are useful instruments in the short term to smooth exchange rate moves against price shock fluctuations (Torvik 2018). In countries where inflation expectations are well secured, the adoption of flexible exchange regimes is appropriate. A flexible exchange regime permits a rapid adjustment of the nominal exchange rate following a terms-of-trade shock, which might result from fluctuations in prices of extractives (Arezki 2018). Depending on the importance of the resource sector in the overall economy or the total export basket, monetary and exchange rate policies should aim to smooth pressures on the appreciation of real exchange rates (Venables 2016).

Financial policies should focus on smoothing price uncertainty, especially for those resource-based economies facing Dutch Disease episodes. Some insurance against price variations can be implemented using financial instruments such as options, swaps, futures, and forwards. These instruments can hedge risks covering horizons typically ranging from three months to three years (Frankel 2018).

Fiscal policy responses to Dutch Disease events can be designed to rapidly smooth government spending, such as by executing—already prepared and enacted—transparent fiscal rules (Devarajan, Dissou, Go, and Robinson 2015). Sovereign wealth funds can also play a crucial role as short-term stabilization mechanisms—with positive long-term growth implications (Van der Ploeg 2018). A policy package of fiscal surplus, combined with monetary policy to reduce interest rates, will moderate real exchange rate appreciation and hence Dutch Disease effects (Corden 2012). For instance, fiscal space can be obtained by reducing fuel subsidies and raising energy taxes, especially in countries where fuel taxes are low and during periods when fuel prices are falling (Baffes, Kose, Ohnsorge, and Stocker 2015).

Preventive Policies

Preventive policies aim to shield the economy from Dutch Disease events over the long term. Especially in resource-based countries, governments and the private sector should consider enhancements of institutional governance features that decrease government rent-seeking behaviors and corruption (Crafts and O'Rourke 2014). Weak institutions can prevent domestic investment and thus the development of a domestic industry that can supply and service extractive activities, which is vital to induce favorable dynamic productivity effects in both the extractive industries and the rest of the economy. Recent literature also shows that policies focused on developing the financial sector are essential for economic growth, especially in resource-based countries (Beck 2018).

A critical long-term policy to prevent Dutch Disease is to diversify the economy. Diversification can happen in terms of a variety of exports, products, and assets (Gill, Izvorski, van Eeghen, and De Rosa 2014). In the case of Dutch Disease, diversification of the economy implies all three, but with an emphasis on enhancing government revenues. The revenues obtained from the extractive industries can be complemented with revenues coming from the lagging and nontraded sectors. Several developing country oil exporters, including Malaysia and Mexico, have successfully diversified their economy in the face of declining oil revenues, expanding activities in both vertical

diversification in oil, gas, and petrochemical sectors and horizontal diversification beyond these sectors, with an emphasis on technological upgrading and competitiveness (Baffes, et al. 2015, Morris and Farooki 2019).

In the specific case of the oil sector, increasing oil prices and activity can not only yield potential positive short-term gains, such as expansion of the overall economy, but potentially are compatible with increases in productivity in most associated local industries, Bjørnland, Thorsrud, and Torvik (2019) show. This rise in productivity across industries is possible in countries such as Norway where domestic industries—through forward and backward linkages—succeed in establishing themselves as service providers to the oil sector; there, the increase in oil primary activities induces favorable productivity effects in throughout the oil sector itself and the rest of the economy.

In the case of Malaysia, central to its successful economic growth and poverty reduction efforts has been the implementation of a variety of economic diversification policies while maintaining macroeconomic stability by pursuing a few conservative principles in administering revenues and expenditures (Yusof 2011). While fiscal and macroprudential frameworks and institutional structures that foster private sector growth are critical factors in economic diversification, financial policies can also support economic diversification (Manama 2016).

All policies to mitigate or prevent Dutch Disease effects have limitations. For instance, the saving-consumption path and investment decisions associated with a resource windfall of foreign exchange are contingent on the capacity and ability of the governments to manage taxation systems well (Van der Ploeg and Venables 2011). The time horizon of governments tends to be too short; and it is a challenge to manage resource revenues while establishing credible fiscal regimes and efficient ways to guide the use and depletion of natural resources (Van der Ploeg and Venables 2011).

If a sovereign wealth fund becomes challenging to implement for a variety of political or technical constraints, the allocation of additional resources during windfalls to specific regions or municipalities should be carefully designed—as there is empirical evidence that suggests adverse outcomes such as an increase in political corruption and a decrease in the quality of politicians at the national and local levels. These negative outcomes have especially happened in regions or communities with weak institutions (Brollo, Nannicini, Perotti, and Tabellini 2013). From a political economy point of view, some analysts note that incumbents may be reluctant to place resource windfalls in a liquid sovereign wealth fund to avoid putting the income generated into the hands of political rivals, especially if there is a strong likelihood that the incumbents could lose elections and leave government (Collier 2010).

Economic diversification also has limitations. If the government attempts to pick winners to diversify its economy, this approach could increase, rather than decrease, export concentration (Maloney and Lederman 2012). Finally, the mitigative and preventive policies discussed do not consider risks arising from extreme natural, environmental, and social events, such as natural disasters and wars.

Conclusion: A Policy Agenda with a Long-Term Perspective

Dutch Disease episodes—in both resource-based economies and non-resource-based economies—seem to be accompanied by expansions in overall investment and economic activity (led by the resource sector and in many cases complemented by the nontraded sectors) and a decrease of external debt. In the long term, however, the Dutch Disease has been associated with lower levels of economic growth. Dutch Disease events should be taken seriously in implementing a policy agenda with a long-term perspective to prevent excessive dependence on natural resources and promote broad-based growth. This agenda can include improvements in the institutional governance of natural resource wealth, development of the financial sector to provide risk management products, and diversification of the economy through a system of selective taxes and provision of public goods.

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