DUTCH DISEASE AND VENEZUELAN ECONOMICS IN RETROSPECTIVE

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Abstract

"Dutch Disease" is a wording to explain a specific economic development whenever a country witnesses a large inflow of financial resources, often resulting from the exports of natural resources. Author develops simplified graphical model of Dutch Disease and examines economics performance of Venezuela in a retrospective on the basis of most recent open statistical data despite the implications in availability of some statistics. Analysis shows clear presence of main symptoms of Dutch Disease.

Key words: Dutch Disease, Resource curse, Venezuela, financial resources, price.

JEL Classification Codes: F 36; L7

Introduction

"Dutch Disease" is a concept describing economics phenomenon when growth of natural resources sector in the country leads to decline in manufacturing or agriculture sector (de-industrialization). The term Dutsch Disease was coined in The Economist in 1977 (1977, 26 November) where they analyzed the economics growth problems that Netherlands faced after the discovery and exploration of North Sea gas fields. Since that time Dutch Disease problem is in focus of investigations regarding the economic development of resource rich countries.

Dutsch Disease is a part of another phenomenon called Resource curse or Paradox of Plenty, what means countries rich in mineral resources perform slow growth rate in comparison with

resource-poor countries. Its main hypothesis is that country that is endowed with some mineral resource (exporting it to the large proportion or having boom on one product of economy) experiences appreciation (enforcement of exchange rate) of local currency that hinders exports of other products of economics, especially with high value-added and also leads to migration of labor and capital to the resource extraction sector. All these effects lead to decreasing of growth rate of the country together with degradation of other (high-tech and\or high value-added) sectors of economics.

To describe the Dutch Disease economists use different models. In the classical literature on this topic two sectors are considered: tradable (T) and non-tradable goods (N). One of the major differences is the economic growth driver. Models of "…van Wijnbergen (1984), Krugman (1987), Matsuyama (1992) and Gylfason et al. (1999)… assume that LBD[Auth: Learning By Doing] only benefits the sector where it is generated, while productivity in the rest of the economy is constant…" (in: Matsem, 2005 - 494-515). Thus, LDB provides the growth only in the tradable sector while non-tradable (N) growth remains unaffected.

Further consideration of such models revealed their complexity for the purposes of present work. That's why rather simplified 3-sector model (instead of 2-sector model) will be applied in the present study. The model consists of service sector and two goods-trading sectors such as "booming" sector and "lagging" one. Booming sector is usually trading some mineral resources such as oil, gas or ores, while lagging sector is assumed to be all sorts of manufacturing. Due to increase in world price of mineral resources, booming sector experiences huge inflows of foreign currencies and becomes more attractive to foreign and domestic investments. Moreover, not only investment and financial resources are migrating to the booming sector, but labor force does the same as well.

The model includes also increasing the demand of services (or, so called, non-tradable sector). Thus service sector also becomes a "magnet" to the labor force and investment.

Migration of investment and labor force to booming resource extraction and service sectors affects manufacturing sector. Obviously, it loses capital and labor force.

But migration effect is not the only one. Enforcement of local currency due to inflow of foreign currencies capital directly affects the foreign market competitiveness of the manufacturing products. The problem is that manufactured products are usually high value-added goods, which world market competitiveness is highly sensitive to the exchange rate of domestic currency.

At the same time, publications on the problem point out the accompanying growth of corruption in the country exposed to Dutch Disease. It is postulated in the Rent-seeking Theory. But, at the same time, data of Di John (2011, - 167-184) witnesses that there is no proper correlation between mineral resource dependency of economics and corruption.

As a final result, the country which experiences Dutch Disease appears in a position when it is highly dependent on one export's good (mainly, mineral resource), its income is highly sensitive to world resource market fluctuations and the territory experiences the process of de-industrialization. Nevertheless, it is necessary to mention that the whole concept of Resource curse or Paradox of Plenty which are usually proven with the phenomenon of Dutch Disease remains debatable. There is also a point of view on the Resource course as exaggerated problem or even wrong concept (Saad-Filho, 2013: 1-21).

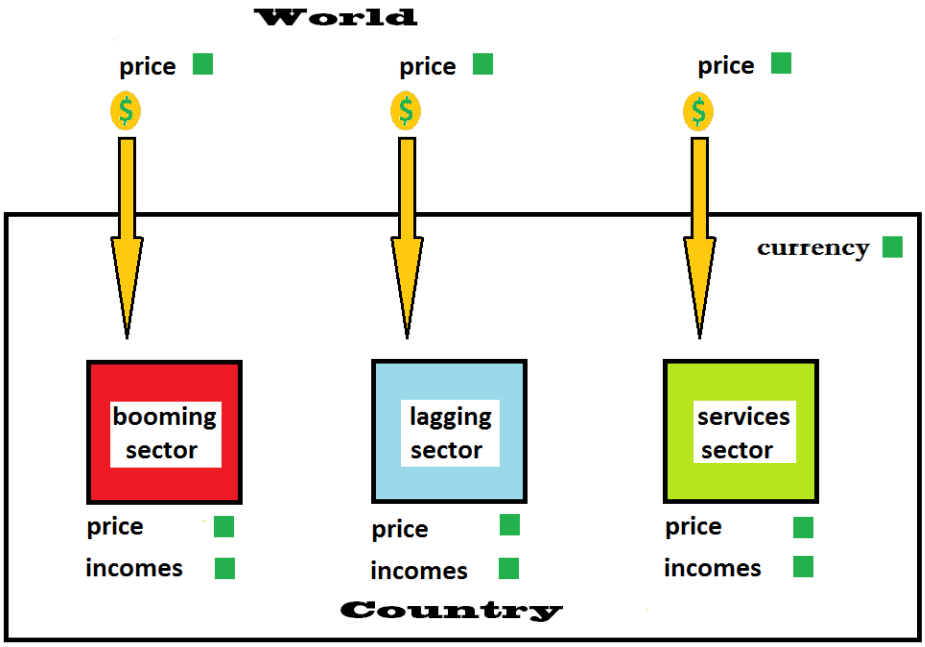
The purpose of present paper was to develop simplified and more "visual" model of Dutch Disease suitable for non-specialist and apply such simplified analysis for the study of typically resource rich country. In present study Venezuela is subjected to the analysis. Venezuelan economics was studied in a few works. There is paper of Auty (1986: 325-338), done relatively long ago, that detected failure of government efforts to effectively transfer extra incomes from oil sector into the development of manufacturing (mainly metals production) and sustainable

economic growth. Recent work of Berry (2008: 148-174) focuses on comparison of the economics' management practices employed to deal with extra incomes from resource sectors in various countries including Venezuela. Present study contains original retrospective analysis, based on own designed methodology and includes most recent statistical data.

Model of Dutch Disease

For the purposes of further analysis it is necessary to define what is assumed the Dutch Disease in present study. In more detailed description Dutch Disease mechanism can me described as follows. In the model of countries' economics 3 sectors are present: the "booming" sector – natural resources exploration, e.g. oil extraction; the "lagging" sector – manufacturing and high value-added production; the "service" sector (non-tradable sector).

Fig.1. Model of 3 sectors' economics of the country. Arrows perform the flow of incomes into the country. White parallelogram is a countries economics, red, blue and salad squares are the respective sectors of the economics. Here and further: small green squares mean no change in price, red arrows mean the rise of price, blue arrows mean the decrease in price

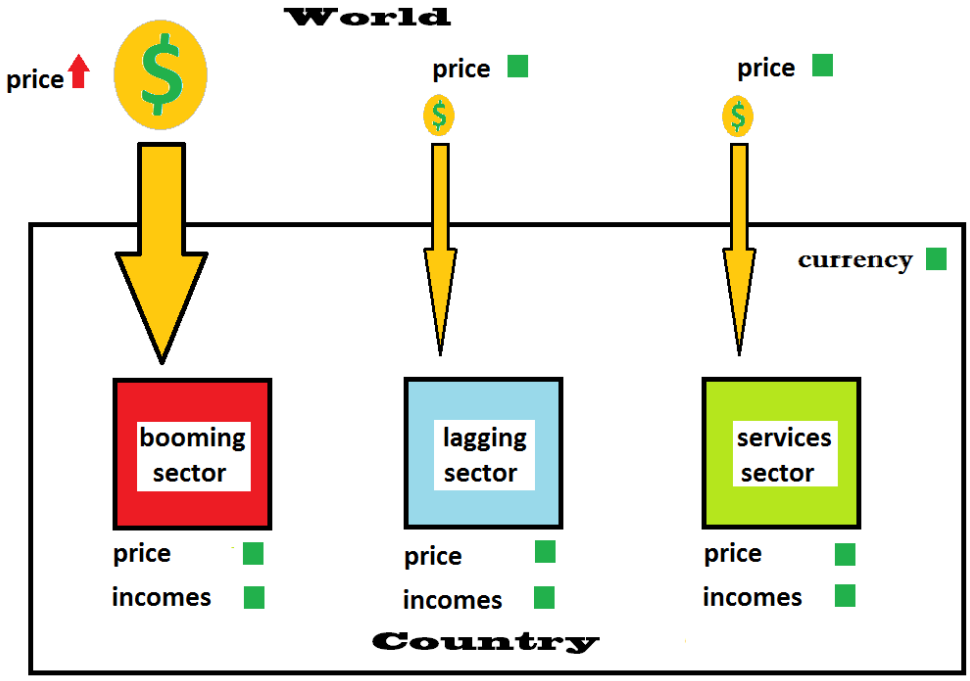


Source: Korobeinikov, 2014

Stage 1: Inflow of foreign currency

Due to some global trade fluctuations or new resource discovery in the country the booming sector (natural resource exploration) experiences significant inflow of foreign currency. World prices of manufacturing products and services do not change. So inflows of foreign currency to lagging and service sector remain unchanged.

Fig. 2. Inflow of foreign currency



Source: Korobeinikov, 2014

Stage 2: migration of labor force and capital to the booming sector

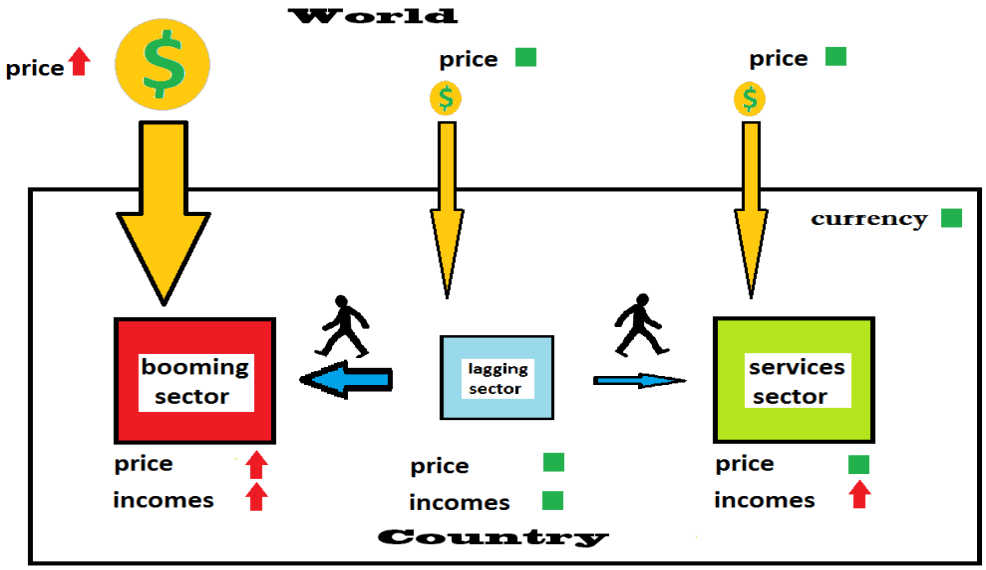
Due to rise of demand on oil the incomes in oil industry rise. The rise of incomes is reflected also in a higher wage rates. Naturally higher incomes in oil sector attract labor force and capital (investments). So, the process of labor force and capital migration begins. As there are only two other places for labor force and capital to be in (manufacturing and services), part of labor and capital attracted by higher incomes in oil sector leaves these places and moves to oil sector.

At the same time, services sector doesn't suffer so much from labor and capital migration in the countries exposed to Dutch Disease. In contrary, service sector usually follows the booming (oil)

sector with increase in incomes. The reason is possibly due to higher demand on products and services from the side of oil sector beneficiaries. Why this demand doesn't help to the local manufacturers? The answer is that local manufacturing goods became more expensive than foreign analogues. The reason for that is described in the Stage 3 below. While increase in incomes of employees and owners of oil sector leads to increase in consumption of imported manufacturing goods, the services are usually provided only by domestic service industry and thus, are not affected.

Due to above mentioned reasons labor force and capital from lagging (manufacturing) sector migrate to booming (oil) sector and services sector. The shares of migration between these two sectors depend on local features.

Fig.3. Migration of labor force and capital from lagging sector to booming and services sectors.



Source: Korobeinikov 2014

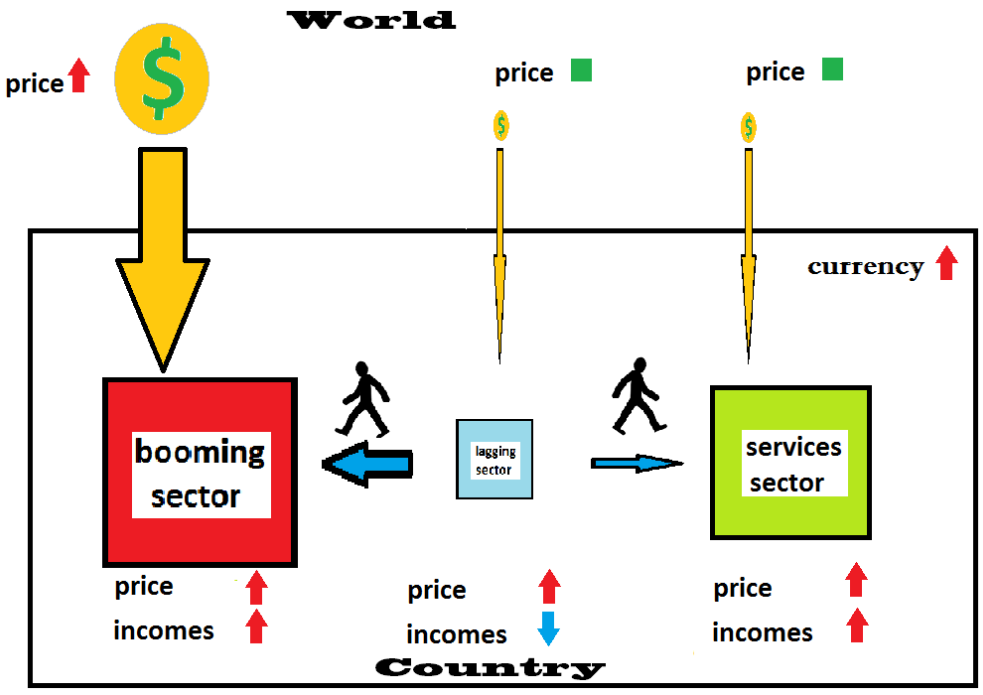
Stage 3: currency appreciation

Due to total increase in foreign currency inflow to the country's economy the exchange rate of local currency growth meaning the enforcement of local currency takes place.

Growth of local currency exchange rate leads to further problems of lagging sector. The manufacturing products are typically high value-added, that's why increase in local currency exchange rate makes them more expensive on export markets, local producers lose their price comparative advantage. At the same time, imported manufacturing goods are becoming cheaper on local market, so lagging sector manufacturers are losing local customers as well.

Service sector doesn't suffer from the currency exchange rate because of the reasons mentioned before – import of services is much more problematic in a short run.

Fig.4. Enforcement of local currency. Export problems of the lagging sector. Further shrinkage of lagging sector takes place.



Source: Korobeinikov 2014

As a perfect result of the Dutch Disease for the country it is expected to see the decline of any high value-added manufacturing and high-tech products industries. And the quick restoration of the manufacturing after elimination of Dutch Disease causes is extremely difficult (Panza, 2014: 149-169) due to complicated nature of manufacturing. Country's budget becomes highly

dependent on the natural resources markets volatility. The management skills of the country's authorities experience obvious degradation due to the fact that national economic structure simplifies and doesn't need top-class management capabilities to compete in the high-tech and complicated industries (Berry, 2008: 148-174). Indeed, managing the mono-economic with no scarcity of the main resource is not comparable with the management of multi-sector integrated industrial economic with the overall scarcity of numerous resources and high competition.

It is necessary to develop the symptoms of the Dutch Disease, which will be checked in the economic development of Venezuela.

To analyze economics performance and development in the Dutch Disease analysis several indicators are usually used, one of the sets are proposed by Algieri (2011: 243–277):

Symptom I: (yman/yserv) = f(prod;rpoil)

Symptom II: reer = f(prod;rpoil)

Where yman/yserv - relative production in manufacturing sector to service sector, prod – relative productivity of manufacturing to services, roil – real oil price, reer- real effective exchange rate.

But for Venezuela not all statistical parameters are available. Therefore, a bit different analytical approach is used. According to the numerous descriptions of the Dutch Disease the following effects can be used as symptoms:

1) Volatility of the GDP with the respect to natural resources market
2) Booming of the natural resources exploration sector
3) Growth of the services sector
4) Declining or stagnation of the manufacturing sector and high value-added sector
5) Reinforcement (appreciation) of local currency

6) Growth of real wage rate – this factor was not explained before, but it is assumed to play a significant role in the loosing of concurrent advantage of domestic manufacturing.

Venezuelan economics will be subjected to the analysis on the presence of these symptoms.

Example of Dutch Disease country

In present work, Venezuela is taken as an example for further analysis of Dutch Disease symptoms.

Venezuela is a country situated in the North of South America continent. Climate is equatorial. Significant part of the countries territory consists of mountain regions. Capital is Caracas (roughly 2.1 mln citizens). The population is around 29 millions of citizens. National currency is Bolivar fuerte.

Country is exceptionally endowed with natural resources. Venezuela has significant amounts of petroleum, natural gas, iron ore, gold, bauxite, other minerals, hydropower, and diamonds. (CIA, 2013)

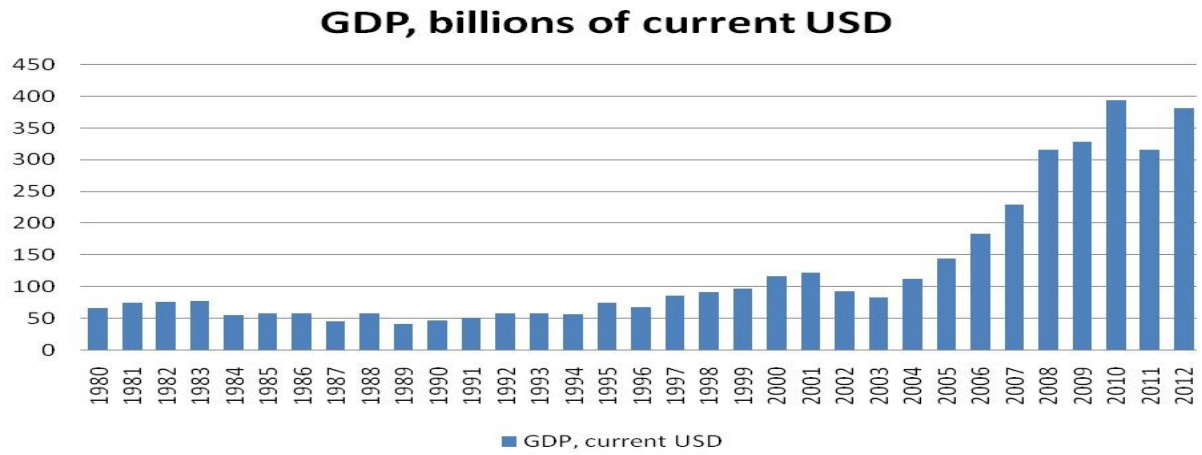
Venezuela has the second-largest proven natural gas reserves in the Western Hemisphere - 195.100 trillion cubic feet (5,52 trillion m^3) (EIA, 2013) In comparison, these reserves are bigger than total ones of European continent. In 2012 country produced 893 billion cubic feet (25,29 billion m3). Consumption was estimated at 980 billion cubic feet.

Venezuela has the biggest proven reserves of oil in Western Hemisphere. Venezuela crude oil production in 2012 was estimated at 146 Mt (Enerdata, 2012) or 2,489.2 thousand barrels per day (EIA, 2013) what equals to 908.558 mln barrels per year and proven reserves are 297.570 billion barrels (EIA, 2013) exports was 479.994 thousand barrels per day in 2010 (175.198 mln barrels per year).

For the analysis of the economic development in Venezuela the mainly the World Bank statistics data (World Bank, 2013) is used. If we look at the history of country's GDP, it is possible to notice significant fluctuations of Venezuelan GDP during the 1980-2012 year period (Fig.5). There

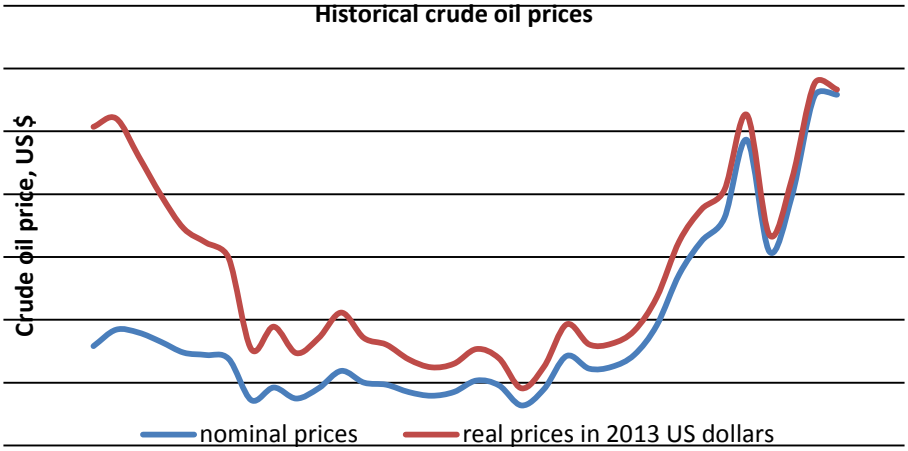
were periods of growth of GDP: 1980-1983, 1990-2001, 2004-2012; and periods of relative "stagnation" (because there was no certain growth trend): 1984-1989, 2002-2003, 2011.

Fig.5. GDP of Venezuela in current US dollars from 1980 till 2012



Source: Korobeinikov 2014, based on statistical data of World Bank

Fig.6. Nominal and real crude oil price



Second piece of this puzzle will be assembled when fluctuation of world oil prices are compared with previous two plots. Plot of oil prices based on BP Statistical Review of World

Energy will be used (BP Statistical Review of World Energy, 2014) as it covers related historical period. In the considered period of 1980-2012 years there were several growth trends in the crude oil prices: 1978-1981, 1989-1990, 1999-2008, 2010-till now.

Comparison of the GDP growth periods with the oil prices growth periods reveals following:

1) 1980-1983 GDP period of high GDP (slight growth) matches a period of high oil prices in 1980-1983. Further drop of the world oil prices is accompanied with sharp decrease of Venezuelan GDP and long relative "stagnation";

2) Jump of the oil prices in 1989-1990 is not responded by the jump in Venezuelan GDP, but 1990 establishes almost a decade of stable growth.

3) Growth trend of oil prices since 2000 is followed by the growth of GDP, but in 2002 there was a significant drop of country's GDP. The most probable reason is political instability due to the attempt of turnover against President Hugo Chaves.

4) Since 2004 GDP of Venezuela is visibly following the growth trend of world oil prices.

According to the facts given above, it is possible to conclude that Venezuela has such a symptom of Dutch Disease as 1) volatility of the GDP with the respect to the natural resources market prices.

Fig. 7 shows the share of industry, agriculture and services in the GDP of Venezuela from 1980 till 2010. The explanation of the plot will be as follows:

Country's economics has 3 main sectors: agriculture, industry, services which together form 100% of GDP. Sector industry is divided into two sub-parts: "manufacturing" and "others". Since the data on the economic development of purely oil sector of Venezuela is not available to author, the following method for estimation will be used. Industry, agriculture and services all together contribute 100% of countries GDP. So, oil sector is naturally a part of industry category. At the same time, The World Bank delivers the statistic data on manufacturing. From the definition of

manufacturing (UN International Standard Industrial Classification of All Economic Activities, 2014) it can be found that oil sector is out of the consideration. Although there might be other industries which are not counted in manufacturing sector, it is possible to assume that among the rest of industries oil and gas extraction will be the major contributor to GDP of Venezuela. But, it should be taken into account that petroleum refining is considered as manufacturing.

As it was assumed that sector "others" is mainly formed by natural resources industry from the Fig.7 it can be noticed that:

- Resource extraction sector was in a decline after the 1980 following the price trend of oil; later it has grown till the pike in 1990;

- Decline in oil prices in the 1990th is followed by the decline of the resource sector in the share of Venezuelan GDP;

- Rising trend of the oil prices in the beginning of 2000th is followed by the growing trend of the resource sector;

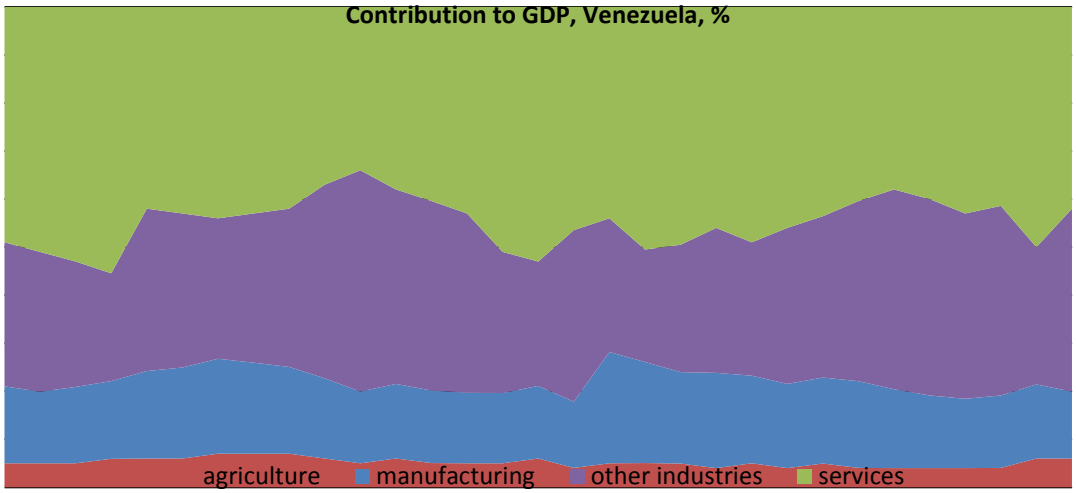
- Fluctuations in the oil price after the beginning of World Economic Crisis in 2008 are repeated by the resource sector of Venezuela.

- There is additional evidence that Venezuelan export is mainly dependent on the resource extraction sector. Fig.8. shows that resource sector and exports of the country are in pro-cyclical relation. At the same time, manufacturing performs rather counter-cyclical correlation with exports trends. Growth of resource sector is always accompanied with the decline of manufacturing contribution to GDP. (Services and agriculture are not considered for the following reason: services are usually consumed domestically and agriculture clearly shows stable low fluctuations in the contribution to country's GDP – see Fig.7);

- Data on the volumes of Venezuelan oil petroleum exports shows the same behavior as total exports of Venezuela (Fig.9)

- Additional information from the Fig.10 shows that high-tech export of Venezuelan manufacturing is relatively small – it is near 3-4% of all manufacturing (not the total!) exports. That means low competitive advantages of countries high-tech.

Fig. 7. Contribution to GDP of various sectors of Venezuelan economy in the period of 1980-2010.



Source: Korobeinikov, 2014, based on statistical data of World Bank

Fig.8. Share (%) of Venezuelan GDP contributed by the exports of goods and services, resource sector and manufacturing in 1980-2012.

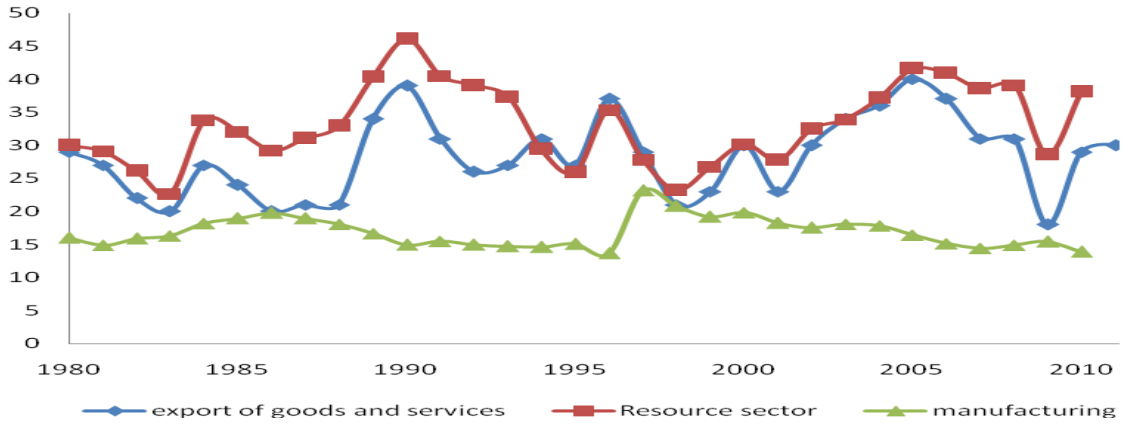


Fig.9. Real prices of Venezuelan oil exports



Source: Palma, 2011, based on the Ministry of Energy and Mining, US

Fig.10. High tech exports, % of manufacturing exports of Venezuela.



Korobeinikov, 2014, based on statistical data of World Bank

So, there are clear evidences that in the periods of high market prices on oil there were "booms" in the resource sector of Venezuela, in other words, two symptoms from mentioned

before: 2) Booming resource sector is also detected and, 4) Declining or stagnation of the manufacturing sector end high value-added sector.

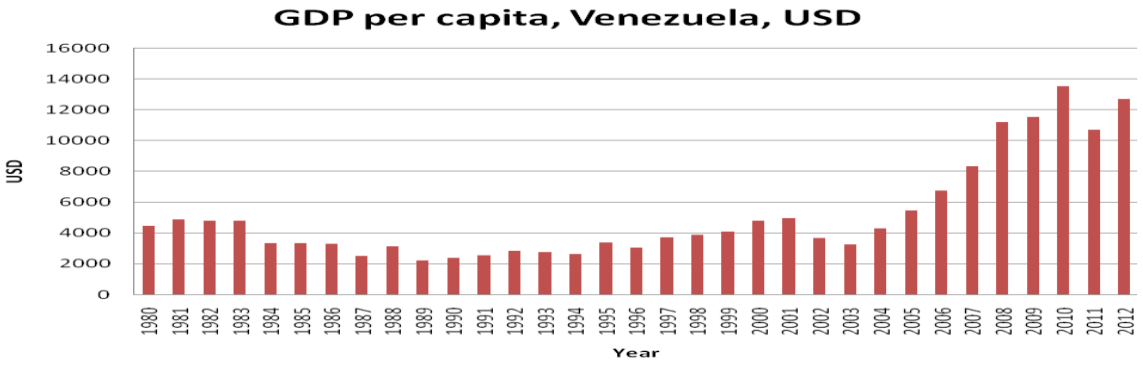
Service sector does not follow the same trend as resource sector (Fig.7). Generally, services sector contributes from 35 to 50% of country's GDP. So, there is no opportunity to clearly detect the following symptom: 3) Growth of the services sector**.**

Analysis of Venezuelan currency appreciation is rather complicated. First of all, there was a strong devaluation in 1983. Second, there was a money reform in 2007 when 1000 Bolivars were exchanged to 1 Bolivar Fuerte (VEB). And third, since 2003 the adoption of exchange control has been established with the fixed VEB-USD exchange rate which changed several times and which is highly deviating from the black market exchange rate in the country. In order to make a review of Venezuelan currency exchange rate, much more sophisticated analysis is required.

So, the symptom: 5) appreciation of local currency in the present survey cannot be clearly identified.

For the analysis of the symptom 6) growth of real wage rate in the absence of real wage rate historical data an indirect indicator – GDP per capita is used. This approach is based on the statement of Berry (2008: 162) regarding the real wage rate in Venezuela: "during the fast growth period, wages appear to have risen more or less commensurate with the growth of output per capita." where output per capita is a function of GDP per capita.

Fig.11. GDP per capita in Venezuela in 1980-2012 in current USD.



As it can be seen from Fig.11, incomes of Venezuelan citizens are in pro-cyclical correlation with the oil prices, which means that during the oil booms country's economics experiences the rise or wage rates.

Results, discussion and conclusions

In the classical trade model of economics booming of natural resources sector should not be regarded as problem. Country should specialize on the natural resource sector and benefit from it. At the same time, such approach is not considering the crucial role of manufacturing sector in the country's strategic, political and social issues. Besides that, developing successful natural resource extraction sector requires deliberately less effort, time and expertise then to develop manufacturing especially vertically integrated production chains. Therefore, countries experiencing Dutch Disease are upon a threat of losing manufacturing which will be hard or not possible to restore after finishing the resource extraction (Krugman, 1987: 41–55) due to degradation of management practices.

Analysis of Venezuelan economics' indicators in the last three decades allows concluding that Venezuelan economy performs rather typical features of country exposed to Dutch Disease. Despite the absence of the exchange rate analysis of local currency and relatively rough real

wage rate analysis, most important symptoms of Dutch Disease are clearly detected. It means that Venezuelan government did not manage to transfer the export revenues of the natural extraction sector to the creation of strong and competitive manufacturing industry. This conclusion is in a good agreement with the results of Berry's (2008: 148-174) analysis of Venezuela economics development policy. In other words, export revenues were mainly spent on the improving of today's well-being of citizens and, in certain sense, not invested to the future.

There are two main counter measures against Dutch Disease. First and easier is sterilization of extra incomes from the boom in resource sector. This means creation of special found for collecting extra incomes and not letting these incomes to inflow in local economic. Examples are Stabilization Found of Russian Federation and State Oil Fund of Azerbaijan. From one side, this measure allows not to worsen economic development of the country by the appreciation of local currency. But from another side sterilization of extra incomes leads to conservation of "current situation" with economics development. So, if the country was not well-developed before the resource boom – there is a threat of remaining in the same conditions during and after the resource boom. Another problem is that in relatively poor countries any extra incomes sterilization will be under pressure of social issue insisting on spending incomes on improving today's well-being. Therefore such measure as sterilization can be more safely employed by relatively well developed counties that have low social issues pressure on government policy.

The second counter measure against Dutch Disease is effective utilization of extra incomes from natural resource sector in order to improve the manufacturing. This can be investment into improving the competitive advantages of existing manufacturing industries or developing a new ones as well as investment in education, science, research & development. Examples of such successful policies are Chile and Indonesia. This way is much more complicated due to high

requirements to finance and strategic management as well as to strict corruption control. Nevertheless, if the government wants to contribute towards future perspectives of the national economics and improve the situation in a long term, it should work in the direction of effective utilization of extra incomes from natural resources inside the country, no matter what efforts it should take to develop necessary management mechanisms.

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