Do international remittances cause Dutch disease?

Beja Jr, Edsel

Ateneo de Manila University

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EDSEL L. BEJA, JR.*

Abstract

The diagnosis: Dutch disease caused by international remittances afflicts the middle income countries but not the upper income and low income countries. The middle income countries can inoculate their economies from getting the disease with robust macro and sectoral economy conditions. But if they get infected, and their condition is not managed well or the illness is treated, Dutch disease could cripple their economies.

Keywords: Dutch disease; international remittances; tradable sector; non-tradable sector

JEL Codes: F24, F41, O11, O14, O41, O57

1. Introduction

Consider first an economy comprised of a trading sector and a non-trading sector. The trading sector produces to export while the non-trading sector produces for domestic consumption. Corden (1984) and Corden and Neary (1982) split the trading sector into a booming export sector and the rest of the export sector.[1]

Suppose then that there are surges in capital inflows after a boom in the export sector. In the classic setup of Corden (1984) and Corden and Neary (1982), shifts in commodities spending in favor of the non-trading sector and movements of resources away from the rest of the export sector in favor of the non-trading sector would occur. Capital inflows take different forms like

* Ateneo de Manila University, Philippines; *Email:* edsel.beja@gmail.com

[1] The classic setup assumes: (i) full employment and mobile factors of production and perfectly elastic demand for commodities of the tradable sector; and (2) the non-tradable sector clears through domestic price adjustments.

windfall profits from the exploitation of a natural resource, increases in income from rising export prices, bursts in international aid, infusions of direct investments, disproportionate subsidies to the booming export sector, or swells in international remittances, but the end result is the same: the rest of the export sector is ruined as the non-trading sector flourishes.

Their setup argues that the shifts in spending and resources are mediated by appreciations in the real exchange rate. With regards to the spending effect, increased incomes following a boom in the export sector increase the demand for both tradable and non-tradable commodities. This increase in demand exerts pressure only on the prices of non-tradable commodities because the prices of tradable commodities are determined by the international market.[2] This increase in the prices of non-tradable commodities, in turn, induces an appreciation of the real exchange rate and subsequently adversely affects the rest of the export sector since their commodities become progressively less competitive in the international market. Stability in this case is achieved with resources shifting away from the rest of the export sector in favor of the non-trading sector.

The process is straightforward in terms of the resource movement effect. The expansion in the booming export sector increases the demand for its factor inputs, which in turn siphons factor inputs from the rest of the export sector and the non-trading sector. The supply of non-tradable commodities consequently decreases and the price of these commodities increases.[3] The price increases in the non-tradable sector encourage production and this response draws resources away from the rest of the export sector. Ultimately, the deployment of resources in the rest of the export sector declines as resources are shifted toward the non-trading sector.

The above description is the stylized pattern of a Dutch disease: the crowding out of the rest of the export sector following large capital inflows into a particular booming export sector. The disease seems straightforward but it should not be perceived as inevitable. In particular, the

[2] Imports satisfy the larger demand for commodities in the short run, but domestic production needs to expand in the medium or long run.

[3] But this process is different from that of spending effect described earlier.

decline in the rest of the export sector can be mitigated, averted, or even reversed through the judicious use of economic policies that support the expansion of production possibilities and the enhancement of external competitiveness through industrialization and industrial upgrading. It is therefore important to determine what the consequences of capital inflows on the economy are and then to identify the appropriate intervention to ensure the continued stability of the overall production.

The question examined in this paper is: *Do international remittances cause Dutch disease?* There is now consensus that international remittances bring in significant capital inflows especially to economies constrained by and dependent on foreign exchange. From around $2 billion global remittances in 1970, total international remittances reached $131 billion in 2000 and are expected to exceed $430 billion in 2010 despite a drawn out global crisis. More than 70% of global remittances in recent years go to developing countries, making these flows much more important than the total of foreign direct investments and overseas development assistance going to the developing countries. Naturally, there are problems concomitant to surges in funds like increased reservation wages (c.f., Puri and Ritzema 1999) and reduction in work efforts (c.f., Chami, *et al.* 2003) that lead to greater population dependencies (c.f., Burgess and Haksar 2005), among others. Yet it is evident that, at the personal level at least, international remittances make possible an increase individual consumption and household welfare even within poor countries. At the aggregate level, it is also evident that international remittances allow increases in national disposable incomes that help fuel economic expansion. In some cases, in fact, international remittances buoy the economy away from grievous balance of payments crises.

Presently, there is no consensus on whether international remittances cause Dutch disease. It is possible that the problems created by sectoral imbalances can be preempted with the use of the appropriate countervailing measures to enhance and ensure the overall productivity of an economy. Given the magnitude of international remittances, inquiring into their relationship with production is important.

2. Diagnosing Dutch disease

The paper takes the lead of Corden (1984) and Corden and Neary (1982) in analyzing the effect of international remittances on sectoral performance but follows Chenery and Syrquin (1975) and Chenery et al. (1986) in measuring the tradable and non-tradable sectors. Here, the tradable sector is defined as exported goods and services whereas the non-tradable sector is the sum of final consumption expenditures and gross capital formation but net of the *total* exported and imported goods and services. The booming export sector – in this case, deployment of workers abroad – does not appear in the setup because commodity-workers are not produced in the same way as conventional goods and services in both the tradable and non-tradable sectors (c.f., Sweezy 1942). By extension, price changes and real exchange rates cannot affect the deployment of workers per se. International remittances, however, still affect sectoral production. Other factors like supply bottlenecks also affect sectoral production (c.f., Hausman et al. 2008).

In contrast to the conventional analyses of Dutch disease that focus on the transmission mechanisms, the focus of this paper is the setting. This so-called "setting" covers the conditions of the macroeconomy, which refer to the overall policy environment created by the government, and the conditions in the sectoral economy, which refer to the general industrial environment that is partly defined by the private sector. Complementarities between settings are allowed. Following Rajan and Zingales (1998), and Rajan and Subramanian (2010), the empirical strategy is to show that sectoral performance points to Dutch disease caused by international remittances and not misdiagnosed to it.[4]

Therefore, the following model is estimated:

$$\log(TT_i) = \alpha_i + \beta_i \log(REM) + \gamma_i \log(\mathbf{X}) + \theta_i \log(\mathbf{Z}) + \delta_i \log(INST) + e_i \qquad (1)$$

$$\log(NT_j) = \alpha_j + \beta_j \log(REM) + \gamma_j \log(\mathbf{X}) + \theta_j \log(\mathbf{Z}) + \delta_j \log(INST) + e_j,$$

[4] Palma (2005), for example, notes that there are four sources of de-industrialization.

where TT is tradable sector and NT is non-tradable sector and as defined earlier, REM means international remittances, **X** is a vector of macroeconomy indicators, **Z** is a vector of sectoral economy indicators, and INST represents institutions. TT, NT and REM are in shares of gross domestic product (GDP).

Macroeconomy indicators cover the fiscal, monetary, and exchange rate policies. Fiscal policy is measured as the share of public sector spending to GDP. This figure serves as a proxy for government participation in the economy and acknowledges that the government plays an important role in structural transformation and progress (c.f., Chang 2002). Obviously, well designed government spending supports the expansion of production capacity while the facilitation of financial intermediation improves the movement of funds across the producing sectors. It goes without saying that uncontrolled government spending is detrimental to long-term sustainability; but if spending is restricted simply because of fiscal consolidation and other related measures, the impact of government participation is diluted and makes fiscal policy ineffective against Dutch disease.

The proxy for monetary policy is inflation.[5] Monetary policy is a complement to fiscal policy and should respond to demand expansions to preempt or quell unnecessary inflation. Of course, loose monetary policy is not helpful for long-term expansion. Still, (quasi) inflation targeting limits the efficacy of fiscal policy. Such anti-growth bias results in high interest rates and, following aggressive sterilization of funds, produces unutilized and underutilized resources that discourage domestic investments for production. As such, restrictive monetary policy may turn out to be the problem rather than the Dutch disease.

The proxy for exchange rate policy is the share of reserves accumulation to GDP. Often the management of exchange rates to avoid drastic currency appreciation translates to changes in international reserves. Like inflation targeting, there is an anti-growth bias to excessive reserves

[5] Money supply is the best proxy but it cannot be used because the time series data is incomplete.

accumulation. In light of the recent spate of capital crises, many governments have assumed a defensive stance to build up enough reserves in preparation for potential speculative attacks on their respective economies. Many governments are also hesitant to use capital inflows to carry out real resource transfers because of inflation phobia. As a consequence, the sectoral setting is susceptible to Dutch disease.

Sectoral indicators attempt to capture production capacity and include labor, industrial, and financial capacities. Labor capacity is the inverse of labor productivity, namely: the ratio of the labor force to GDP. It is normal for labor capacities of the tradable and non-tradable sectors to vary given the nature of their output and production technologies, as well as the overall macroeconomic environment. They also vary across different levels of economic development. Increasing labor productivity translates into a falling ratio. Naturally, labor is released in the process but it does not mean that Dutch disease is in play. Limited economic development or economic stagnation translates into low demand for labor and that also releases labor from production. Such case also does not indicate that the Dutch disease is in play. How and how well the economy reallocates labor to enhance sectoral production indicates the strength of sectoral capacity. In this paper, it is enough to show that the increase in labor capacity strengthens the tradable sector.

Industrial capacity means the depth of the production sectors. This proxy is measured as the share of total value added of the agricultural and industrial sectors to GDP.[6] Structural transformation means that economic development generates the reallocation of resources across sectoral activities, but such change does not mean Dutch disease is in play because these shifts come with changes in the structure of production. In this paper, it is enough to show that structural transformation strengthens the non-tradable sector.

Financial capacity is the share of total credit provided by the monetary authorities and

[6] Time series data on the share of manufacturing to GDP are incomplete. This indicator corresponds to the second phase of structural transformation (c.f., Kuznets 1971).

banking institutions (to the different sectors of the economy) to GDP. This proxy measures the strength of financial intermediation that brings about effective usage of internal and/or external funds. Financial depth makes robust sectoral production possible but it benefits more the segment in the economy that exhibits increasing returns. In this paper, it is enough to show that financial depth boosts the tradable sector.

Lastly, institutions help explain differences in structural transformation across countries (c.f., Hsieh and Klenow 2009) because they affect the character and direction of the industrial catching-up process (c.f., Comin and Hobijn 2008, Nelson and Phelps 1966, and Lucas 2009). The share of imports of goods and services to GDP is the proxy for institutions. Bearing in mind that importation is critical to technological diffusion and adaptation, this proxy is a useful, albeit a rough, measure for institutions. Importation also eases relative scarcities in sectoral production and domestic consumption, and so the proxy also serves to capture bottlenecks in the economy.

Data are from the *World Development Indicators*.[7] The dataset includes 20 countries and spans 25 years (i.e., 1984 to 2008). The sample is from the list of top international remittances recipient countries listed in the *Migration and Remittances Factbook 2008*. The only restriction is data completeness: countries with incomplete series are excluded from the dataset. Countries are grouped by income following the World Bank categorization. Appendix 1 contains the summary statistics. Equation 1 is estimated using the Seemingly Unrelated Regression procedure. Dutch disease caused by international remittances requires $\beta_i < 0$ and $\beta_j \geq 0$.

3. Who gets Dutch disease?

The summary of regressions is in Table 1. The main diagnosis is the following: Dutch disease caused by international remittances is a middle income country problem. This affliction may be part of structural transformation. Simply put, those who are able to manage the changes brought about by international remittances are able to move up the industrialization ladder, whereas those

[7] Data are downloadable without charge from the World Bank website: http://data.worldbank.org

that fail could get stuck in their development or, worse, fall down from the economic ladder.

Dutch disease due to international remittances is not a problem of upper income countries possibly because the declines in their tradable sectors is primary driven by factors like economic maturation, which give rise to de-industrialization. The results from low income countries are inconclusive since international remittances adversely affect both sectors. But since low income countries do not possess viable production structures in the first place, it can be inferred that international remittances are used as income substitutes for domestic production and thus sustain industrial retrogression. The diagnosis reinforces the oft repeated mantra that industrialization in developing countries is needed to avoid economic decline.

[Insert Table 1 about Here]

The next set of diagnoses involves the results on the macroeconomic settings. Government spending in both the upper income and low income countries bolsters the tradable and non-tradable sectors. Government spending appears to have a stronger effect for upper income countries. What can be inferred from this result is that the government remains as an important agent of industrialization even if the country reaches a high level of income. To some extent, the weak results for the low income countries are expected because the public sectors of low income countries are typically not as strong as the public sectors of upper income countries. Still, the finding is instructive: where the private sector plays a limited role in the economy, government needs to assume the responsibility of boosting economic activity to avoid an economic collapse. So contrary to the dominant economic view, it is still necessary for the government to take on an active role in structural transformation. Moreover, it is critical that the government defines its role in the economy and not merely allow itself to cater to the whims of special interest groups and/or the market itself. Little can be gleaned from the results for the middle income countries.

With regards to inflation, results for the middle income countries differ from what the Dutch disease stipulates. The shift in production becomes sensible if high inflation is a symptom of economic risks rather than a direct consequence of a greater demand for non-tradable goods. In the absence of economic stability, it may be more sensible to promote the tradable sector because, at least, prices there are relatively more predictable as they are determined by the international market. The converse argument is consistent with the cases where (quasi) inflation targeting is in place. For the upper income countries, results indicate that inflation shifts production to the non-tradable sector perhaps because the international market is relatively more unstable compared to their domestic market. Interestingly, this finding supports the utility of (quasi) inflation targeting in the upper income countries.

Results for international reserves show that, for both the low income and middle income countries, currency stability helps in strengthening their tradable sector but upsets their non-tradable sector. In upper income countries, currency stability supports the non-tradable sector more than the tradable sector. What can be inferred from this finding is that the implementation of appropriate international reserves management policies in the developing countries is crucial to the realization of balanced industrialization.

The next set of diagnoses is as follows. Labor released from sectoral production creates a pool of workers that dampens wage increases or, at least, guarantees sufficient labor supply to sustain industrial deepening. The underlying issue is not just about how labor is mobilized but the manner in which labor gets absorbed into the production sectors. Results show that, in the middle income countries, increased labor productivity frees workers from both tradable and non-tradable sectors and they may be available for overseas deployment. For the upper income and low income countries, increased labor productivity releases workers from the non-tradable sector and some get absorbed in the tradable sector. Results also suggest that improvements in labor productivity are needed in the upper income countries to maintain their status in the international market, whereas raising labor productivity are needed to launch industrialization in low income countries.

As the share of the key production sectors shifts, there are also shifts between the configurations of the tradable and non-tradable sectors. The middle income countries appear to conform to this assertion. For the low income countries, the shifts in their production sectors strengthen both tradable and non-tradable sectors simply because movement from the interior to the frontier of their production possibilities necessarily increases the quantity of production and the reallocation of resources along way improves the quality of production. For the upper income countries, results suggest a need for rapid discovery and innovations because, obviously, they are already on the frontier of their production possibilities.

Greater financial capacity in the middle and low income countries empowers the tradable sector more than the non-tradable sector. Thus, as production expands as industrialization sets in. There is a greater demand for financial intermediation emerges and enables complementarities between the financial and tradable sectors. For the upper income countries, results show the reverse trend. Perhaps the finding indicates how financialization in the upper income countries has transformed financial intermediation from a mechanism that supports production in general to an instrument for assets accumulation.

The final part of the diagnosis deals with the institutions indicator. Results indicate that importation acts as substitute for domestic production and as complement to external production, indicating that it could potentially help prevent or even reverse the Dutch disease. Without doubt, this finding validates concerns that importation can hurt domestic production. At least from the diagnosis, such difficulty is perhaps least problematic in low income countries where production structures there are not particularly well developed. But it appears that the middle income and upper income countries face the greatest challenge. This situation is perhaps because having a developed production structure obliges domestic production to view importation as competitor. It is important to reiterate that the findings suggest that only the upper income countries are able to realize more valuable tradable sector production for every unit of importation. What can be inferred from this situation is that developing countries cannot catch up with the upper income

countries on the economic ladder.

4. Conclusion

This paper presented an examination of Dutch disease caused by international remittances. The findings indicate that the middle income countries are susceptible to that strain of the disease. The findings further indicate that the macroeconomic and sectoral economy settings are relevant considerations when taking preventive measures or seeking remedies for the illness.

Therefore, to the extent that the macroeconomy settings help shape the character of sectoral production, economic progress can be made more deliberate. To the extent that structural changes affect sectoral production, industrialization can be planned or pursued strategically by the government and not left to be arbitrarily determined by market forces. The development of the appropriate policies is crucial to this end. It is essential that the policies are enough to facilitate structural transitions. Government plays a critical role in this context. But it first needs to regain and then exert greater control over policy-making and execution. That role also needs to expand to include managing market power and political interests. Handling conflicts that arise with market and political competition is an important consideration for the government because they limit the capacity of the government to effect significant structural transformations. Private sector is expected to play an important complementary role, especially in providing the ultimate driver in the determination of resource allocation and the source of economic dynamism in the search for opportunities and profits. The collaboration of government and the private sector is needed in this regard and especially because some activities could only become attractive or feasible to private initiative only after the government provides the initial stimulus to catalyze production or create opportunities for diversification. Indeed, this problem is particularly serious in developing countries where markets are missing and faulty and governments are weak and captured. As long as the rules for involvement are clear and enforcement is fair, government and private sector engagements are opportunities for accomplishing real industrialization and stimulating structural

transformation.

In short, Dutch disease caused by international remittance is both preventable and curable. The middle income countries can get their economies inoculated from getting the disease if they exercise due vigilance and ensure the stability of production in their respective economies. If they get infected then they must act with due haste in order to prevent the disease from crippling their economies.

List of Countries

Australia, Bangladesh, Brazil, China P.R., Colombia, Dominican Republic, Egypt, El Salvador, France, Germany, Guatemala, India, Mexico, Morocco, Pakistan, Philippines, Portugal, Spain, United Kingdom, United States

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Appendix: *Descriptive Statistics*

		Mean	Std. Dev.	Minimum	Maximum
Full Sample	International remittances to GDP	25.31	9.12	9.51	41.71
	Imports of goods and services to GDP	3.18	3.19	0.02	11.10
	Government expenditure to GDP	14.02	4.98	4.71	23.01
	Inflation	31.10	99.75	2.46	454.00
	International Reserves to GDP	7.34	4.47	0.75	16.50
	Labor capacity	331.94	409.80	18.83	1,513.63
	Industrial capacity	39.71	10.20	24.60	64.85
	Financial capacity	79.72	40.98	30.51	183.28
Upper Income	International remittances to GDP	24.78	7.37	12.91	36.23
	Imports of goods and services to GDP	0.90	1.46	0.02	4.18
	Government expenditure to GDP	18.88	2.32	16.06	23.01
	Inflation	3.96	1.59	2.46	7.12
	International Reserves to GDP	4.29	2.89	0.75	9.54
	Labor capacity	30.06	15.02	18.83	62.32
	Industrial capacity	29.00	2.95	24.60	32.45
	Financial capacity	120.38	31.28	81.78	183.28
Middle Income	International remittances to GDP	5.13	3.50	0.26	11.10
	Imports of goods and services to GDP	28.97	10.51	9.51	41.71
	Government expenditure to GDP	11.78	4.01	6.22	17.56
	Inflation	62.84	146.85	3.98	454.00
	International Reserves to GDP	9.28	4.02	3.60	15.85
	Labor capacity	253.00	107.33	96.18	465.24
	Industrial capacity	42.70	5.35	34.35	52.10
	Financial capacity	56.69	25.78	30.51	98.09
Low Income	International remittances to GDP	2.77	1.89	0.43	4.50
	Imports of goods and services to GDP	17.98	3.36	13.48	21.15
	Government expenditure to GDP	10.57	4.19	4.71	14.68
	Inflation	7.14	0.73	6.34	7.99
	International Reserves to GDP	8.32	5.72	4.28	16.50
	Labor capacity	1,037.85	369.71	632.23	1,513.63
	Industrial capacity	51.72	8.88	45.29	64.85
	Financial capacity	60.36	31.01	33.85	105.11

Source of raw data: *World Development Indicators* online

Table 1: *Regression Results*

	Upper Income		Middle Income		Low Income	
	Trade	Non-trade	Trade	Non-trade	Trade	Non-trade
Constant	-0.836^{ws}	3.256^{vs}	-1.168^{vs}	10.295^{vs}	2.377^{hs}	6.063^{vs}
Dummy Post-1997 = 1	-0.042^{ws}	0.100^{vs}	0.101^{vs}	-0.386^{vs}	0.129^{vs}	0.089^{vs}
International Remittances	0.002	0.092^{vs}	-0.041^{vs}	0.136^{vs}	-0.142^{vs}	-0.013
Imports of goods and services	1.079^{vs}	-1.312^{vs}	0.821^{vs}	-1.118^{vs}	0.824^{vs}	-0.200^{vs}
Macroeconomy indicators:						
Government expenditure	0.127^{ws}	0.831^{vs}	-0.055	-0.025	0.032	0.237^{vs}
Inflation	-0.077^{vs}	0.088^{vs}	0.025^{s}	-0.116^{vs}	0.001	-0.009
International Reserves	-0.003	0.092^{vs}	0.011	-0.034	0.064^{vs}	-0.045^{vs}
Sectoral economy indicators:						
Labor capacity	-0.090^{vs}	0.118^{hs}	-0.054^{ws}	-0.157^{s}	-0.026	0.281^{vs}
Industrial capacity	0.316^{vs}	0.003	0.471^{vs}	-0.286	-0.857^{vs}	-0.661^{vs}
Financial capacity	-0.112^{vs}	0.390^{vs}	0.041	-0.112^{ws}	0.322^{vs}	-0.272^{vs}
Adjusted-R^2	0.923	0.706	0.794	0.429	0.902	0.849
N = observations	175	175	225	225	100	100

Note: Calculations of the author. vs = very significant ($\alpha = 0.01$), hs = highly significant ($\alpha = 0.05$), s = significant ($\alpha = 0.10$), ws = weakly significant ($\alpha = 0.15$). Upper Income = Australia, France, Germany, Portugal, Spain, United Kingdom, and United States. Middle Income = Brazil, Colombia, Dominican Republic, Egypt, El Salvador, Guatemala, Mexico, Morocco, and Philippines. Low Income = Bangladesh, China, India, and Pakistan. The groupings follow the World Bank's classification of countries.