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**Shift of paradigms in the context of globalization:
Does Apple damage the US economy?**

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*TEPAV Evaluation Note
March 2011*

Shift of paradigms in the context of globalization: Does Apple damage the US economy?¹

With the acceleration of globalization, developed countries started to benefit more from cheap labor, raw materials and energy in developing countries. Multinational firms, shifting production to developing countries, established more efficient value chains thanks to the low costs. This, along with the improvement of global networks, altered the balance of payments of the countries throughout the world. Assessment of the current account deficit problem widely discussed in many countries, the US to begin with, in the recent period independent of the impacts of the globalization process and the multinational firms and inter-country value chains will be a deficient one. Therefore, in this globalizing world, nation-state based analysis requires a higher degree of caution.

This evaluation note argues that the nation-state based analysis of international trade and balance of payments accounts might lead to false interpretations. Due to this reason, the mentioned accounts need to consider new definitions that regard international trade networks. The following section of this note addresses this hypothesis on the basis of the cases of Apple and iPhone and questions the sufficiency of nation-state based definitions in enlightening international trade balance and current account balance accounts. The note maintains that calculation of the trade balance on the basis of value-added or exclusion of the internal activities of the multinationals off the international trade accounts could reflect inter-country balances more accurately than the current definition.

Value added factor and the case of iPhone

A recent report published by the Asian Development Bank states that iPhone, an invention of the US based Apple, is manufactured in China, worsening the bilateral trade imbalance between the US and China to the detriment of the former².

Manufacturing of an iPhone involves 9 firms apart from Apple. These firms are based in the US, Germany, Japan, Korea and Taiwan. Table 1 shows the components and cost drivers of an iPhone. According to this, the components produced by the eight firms listed in the table are assembled in Taiwan-based Foxconn's plant in China. iPhones are then exported to the US and the rest of the world.

The production process and the cost structure of iPhone distorts the bilateral trade balance between the US and China to the detriment of the US: Although out of the total cost of one unit of iPhone, which is US\$ 178.96, only US\$ 6.5 (3.6 percent) originates from China, the entire value of the assembled iPhones sold by China to the rest of the

¹ Aysegül Dinççağ, TEPAV Research Associate, <http://www.tepav.org.tr/en/ekibimiz/s/1114/Aysegul+Dincceg>

² Xing and Detert (2010), "How the iPhone Widens the United States Trade Deficit with the People's Republic of China," Asian Development Bank

world are counted as China’s exports³. However, out of a total of US\$ 2 billion corresponding to China’s exports of iPhone to the US, only US\$ 73 million originated from the value added contributed in China⁴.

Table 1. Apple iPhone 3G’s Major Components and Cost Drivers

Manufacturer	Component	Cost (\$)
Toshiba (Japan)	Flash Memory	24.00
	Display Module	19.25
	Touch Screen	16.00
Samsung (Korea)	Application Processor	14.46
	SDRAM-Mobile DDR	8.50
Infineon (Germany)	Baseband	13.00
	Camera Module	9.55
	RF Transceiver	2.80
	GPS Receiver	2.25
	Power IC RF Function	1.25
Broadcom (USA)	Bluetooth/FM/WLAN	5.95
Numonyx (USA)	Memory MCP	3.65
Murata (Japan)	FEM	1.35
Dialog Semiconductor (Germany)	Power IC Application Processor Function	1.30
Cirrus Logic (USA)	Audio Codec	1.15
Rest of Bill of Materials		48.00
Total Bill of Materials		172.46
Manufacturing costs (China)		6.50
Grand Total		178.96

Source: Xing and Detert (2010)

As the above table suggests, China, being solely the assembly location in Apple’s multinational production chain, does not have a significant role in aggravating US’s trade deficit. Apple’s production processes are set and pricing decisions are made at the headquarters based in the US. The only impact the China can make on the trade imbalance is allowing Yuan’s appreciation. However Apple might still prevent the reflection of the changes in the exchange rate on the prices. According to the calculations

³ In 2009 sales of iPhones contributed by US\$ 1.9 billion to the trade deficit of the US (this corresponds to 0.8 percent of the bilateral trade balance between the US and China). This impact is expected to intensify in the next years due to the increase in sales of iPhones.

⁴ This mechanism also applies for other Apple products. iPod and iPad go through similar production processes and are sold to the US and to the rest of the world after being assembled in China. For these products the value added originating in China varies between 3 and 5 percent (Source: iSuppli Market Research)

made by Xing and Detert, a 20 percent appreciation in the value of the Yuan reduces the iPhone exports from China to the US only by 6.8 percent.

Under the current circumstances in which multinational production chains spread increasingly throughout the world, calculation of international trade balances on the basis of the nation-state definitions falls short in explaining the dynamics. A clearer picture of the current outlook can be drawn by considering the “trade balance = value added - imports” formula accompanied with the conventional “trade balance = exports - imports” formula.

The impact of multinational firms

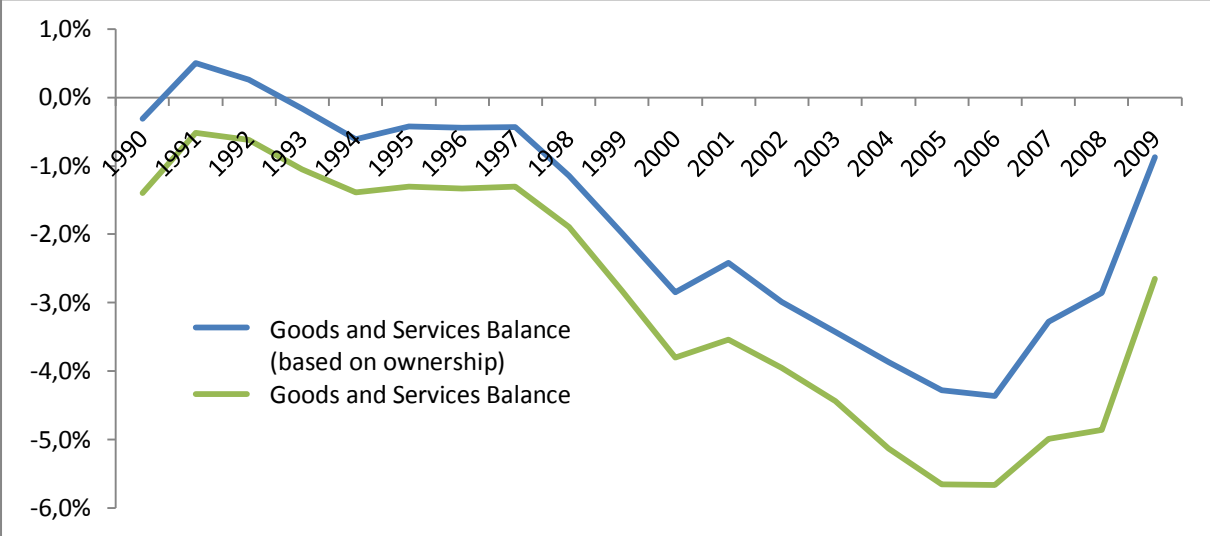
A similar shift of paradigm can also be observed for the current account deficit. Activities of the multinational firms can affect the home country in two ways: If the countries to which production is shifted also serve as markets for the finished goods, current account deficit of the home country will decrease. Nevertheless, if the finished products are exported back to the home country, where they will be sold to the final consumers, the current account deficit of the home country will increase⁵.

This second way adds another dimension to the current account deficit problem in countries which shift their production to other countries to cut costs. Hiking current account deficits is the corollary of globalization for countries like US, where almost one third of the current account deficit stems from the foreign activities of domestic firms, in particular implying that such countries cannot prevent the deterioration in the current account balances as long as multinational firms continue their operations. Furthermore, since multinational firms make their production strategies and profit structure plans for a long-term horizon, changes in the exchange rates will not be sufficient for reversing the balances.

US Department of Commerce, Bureau of Economic Analysis (BEA) includes a different definition for goods and services balance: ownership-based balance. This definition calculates the goods and services balance without taking into account the trade between the affiliates of the multinational firms. According to this, goods and services balance, which constitute the two largest items of US's current account balance, is found to be 1.2-2 percent lower. This implies that the risk current account deficit poses to the US economy is actually smaller.

⁵ McKinsey (2004), “A New Look at the U.S. Current Account Deficit: The Role of Multinational Companies”

Figure 1. Goods and Services Balance in the USA, Ratio to the GDP (%)



Source: BEA

In consequence, since the spread of multinational firms throughout the world has altered the balances between countries, some indicators need to be reconsidered. The mentioned process, which affects the trade and current account balances of developed countries adversely, similarly might tend to overstate some indicators in favor of developing countries. For instance, countries hosting the production facilities of multinational firms will enjoy a positive impact on their balance of payment, understating the economic risks. Calculation of the trade balance on the basis of value-added created and of the balance of payments accounts on the basis of ownership might give alternative insights about the state of a given economy. Moreover, stock market indices that give clues about the state of an economy must be reinterpreted since they will be influenced by the decisions of multinational firms in this milieu of globalization.

The mentioned indicators and paradigms are of importance for countries like Turkey which go through a process of transition from medium-technology to high-technology production pattern. In order to analyze the economic impact of the changes in export patterns as a result of the production multinational firms carry out in Turkey, international value chains must be considered and the current account deficit phenomenon must be reinterpreted in the context of globalization. Economic definitions taking the nation-state as a basis are alone insufficient to assess the current situation in Turkey in the phase of integration into the global value chains.