DETERMINANTS OF THE BALANCE OF PAYMENTS AND EXCHANGE RATES

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Summary

As a record-keeping device, the balance of payments is a fairly uncontroversial construct. Since the internal consistency of its macroeconomic structure, together with accounting conventions, prescribe that the balance of payments always balances, substantial questions arise only in relation to its component accounts. A succession of approaches informed by alternative views of the balance of payments identify a number of core determining variables that include prices, incomes, interest rates, and expectations. These alternative views extend also to the price that affects all cross-border transactions—the exchange rate.

The divergent prognoses of component account adjustments and exchange rate behavior are to some extent attributable to the incomplete flow specifications of market equilibrium and to the vagaries of expectations. But full stock-flow interaction and rigorous specification of expectations formation have yet to deliver a comprehensive and robust consensus view of the determination of the balance of payments and the exchange rate that is consistently corroborated by the evolving empirical record.

Is there an "equilibrium" balance of payments? To the extent that cross-border flows are determined entirely by the requirements of stock equilibrium, it follows tautologically that any non-zero net flows are symptoms of disequilibrium. On the other hand, economic openness affords opportunities for welfare improvement that are not attainable under autarchy. Optimal temporal and intertemporal resource allocation may give rise to transitory net cross-border flows that are compatible with equilibrium.

Conceptual difficulties of specifying the equilibrium balance of payments translate into practical difficulties for transactors in assessing the state of the balance of payments at any given point in time. They also render ambiguous the desirability and sustainability of particular current and capital account outcomes. Such assessments, however, constitute an essential input into the formation of expectations about balance of payments and exchange rate prospects, and the formulation of economic policies. The need to second-guess governmental perceptions and potential policy reactions compounds the uncertainty faced by private transactors. Consequently, market expectations are remarkably fickle and susceptible to revisions in response to snippets of incidental information, with potentially severe implications for the determination of the balance of payments and exchange rates.

1. Introduction

Voluntary economic transactions are motivated by the pursuit of self-interest on the part of each of the contracting parties. Whether the transaction involves a pound of meat or an ownership claim on a high-tech company (a "share"), the buyer prefers the meat, or share, to whatever he agrees to give up in payment for it. Similarly, the seller willingly surrenders these objects in preference to whatever is received in exchange. Were this not so, the exchange would not be voluntary. At this fundamental level, the nationality of contracting parties is of no economic significance, except as a possible source of systematic differences in preferences, customs, or behavior.

In practice, however, there is one important factor that brings the nationality, or more precisely the residency, of the parties to an exchange into play. This is the existence of national moneys. In most countries, money is the only legally accepted medium of exchange, the *quid pro quo* with which payment for a transaction must be made. This fact introduces an important distinction between residents of the same country and transactions that cross national borders. The latter exchanges involve the additional requirement of mediation between the different moneys in which buyers and sellers operate, and are also subject to the several sets of laws, rules, and regulations and govern market behavior in different political jurisdictions involved. At the same time, the economic impact of such transactions is not contained within a single economy, but is spread across more than one national economy. It is therefore economically meaningful and useful to distinguish systematically between domestic and cross-border transactions.

The balance of payments is the analytical construct that implements this distinction. It encompasses all those transactions of domestic residents in which the contracting party to the exchange of goods or financial instruments is a foreign resident. As such, the balance of payments performs two conceptually distinct functions. On the one hand, it

serves as a recording device that keeps track of the flows of goods and financial assets into and out of a country, and of the associated payment flows. On the other hand, it serves as an analytical tool for exploring the implications of cross-border transactions for the domestic economy and domestic economic policy. Since final payment in cross-border transactions involves different currency regimes, the balance of payments also provides the backdrop to the foreign exchange market and the behavior of exchange rates.

Salient aspects of the recording of cross-border transactions have already been described in *International Economics, Trade and Finance.* Suffice it to say here that the recording is firmly grounded in the principles of double-entry bookkeeping, so that both sides of any exchange, i.e., the object of exchange and the payment for it, are tracked. This convention ensures that, in principle, the balance of payments accounts must balance at every point in time. It also implies that there can be no such thing as a "balance of payments deficit" or a "balance of payments surplus": the balance of payments accounts always balance! Deficits or surpluses can occur only in some subset of the balance of payments accounts such as the trade balance, or current account, or capital account. Given the practical problems of balance of payments accounting associated with disparate information sources, inaccurate reporting, interpretational ambiguities and the like, balance of the actual accounts is enforced statistically by the inclusion of a residual "balancing item" (frequently denoted "errors & omissions"). International agreements on reporting practices and accounting conventions underpin the integrity and mutual consistency of national balance of payments accounts. Notwithstanding the conceptual consensus, the consolidated national balance of payments records indicate that the trading world as a whole has been running annual current account deficits in excess of US$ 100bn for some time. In the absence of covert interstellar trade flows, the appearance of manna from heaven in such profusion does alert us to the practical and logistical difficulties of data collection, as well as to the power of incentives for creative representation of transaction flows.

2. The General Equilibrium View of the Balance of Payments

In order to gain an overview of the structure of a national economy, and of the role of the balance of payments, it is convenient to abstract from the details of individual market transactions and to focus instead on core elements. To this end we may distinguish between two generic types of markets-–the market for goods and services and the market for financial instruments. The rationale for this distinction is that goods and services can provide satisfaction directly to individual agents, whereas financial instruments can do so only indirectly by virtue of the command over goods and services that they confer on their owner. The special status of money as the only legally enforceable means of payment singles out the money market for separate consideration. Denoting all nonmonetary financial assets as "bonds" for expositional simplification, it follows that all transactions must involve the goods, bonds, or money markets in some combination. Direct swaps, or intra-market transactions, aside from violating the rules of monetized exchange, are of no direct significance from the present macro perspective (even though they improve the well-being of the agents concerned), since they merely involve a change in ownership of generically similar objects that leaves the overall balance between demand and supply in that particular market unchanged.

The general equilibrium structure is tied together by adding-up constraints. Rational behavior presupposes that individuals observe their budget constraint. Disposable income must be exhausted by spending on goods and services or by saving. Savings may be held in the form of real assets ($\Delta K \equiv I$: investment), or bonds (ΔB), or money (ΔM). (The difference operator "Δ" denotes a change in a variable; in the present instance, changes in the stock of capital (K), bonds (B), or money (M).) Since any transaction constitutes a simultaneous purchase and sale of identical value, aggregation over all transactions in any market must yield a zero balance. Transactions in each of the three markets may involve either domestic or foreign residents. Differences in behavior and economic motivation of private and public agents, and the responsibility for the conduct of economic policy of government and its instrumentalities, suggest a further differentiation of the domestic sector into a private sector and a government sector. This stylized structure of general equilibrium is represented in Table 1 as a simple matrix composed of three markets and three sectors.

SectorMarket	**Private** (Domestic)		**Public** (Domestic)		**External** (BoP)
Goods	$S - I$	+	$T - G$	=	NEX
	-		-		-
Bonds	ΔB_p	+	$-\Delta B_g$	=	ΔNF
	-		-		-
Money	ΔM	+	$-\Delta DC$	=	ΔIR
	=		=		=
	0	+	0	=	0

Table 1: The General Equilibrium Structure of the Open Economy

The last column of Table 1 represents the balance of payments and its main constituent elements: the net flows of cross-border transactions in goods, bonds, and money. It also illustrates that the balance of payments must necessarily balance: the entry in the southeast cell of the matrix always equals zero. Net exports (NEX), or the trade balance, represent the difference between cross-border sales (exports: EX) and purchases (imports: IM) of goods and services. Purchases of bonds from foreigners increase a country's foreign asset holdings and sales of bonds to foreigners reduce them. The increase in a country's net foreign assets (ΔNF) constitutes the balance of capital account transactions, or net capital flows. And net monetary payment flows in the form of cross-border transfers of gold, foreign currency reserves, or Special Drawing Rights on the IMF alter a country's holding of international reserves (ΔIR). Reading from top to bottom, the entries in the last column confirm that cross-border sales of goods and bonds in excess of purchases must be paid for by internationally acceptable means of payment (gold etc). Equivalently, the proceeds from net sales of goods and services to foreigners may be used to acquire claims from foreigners in the form of bonds or international reserves:

$NEX = \Delta NF + \Delta IR$, or
$NEX - \Delta NF - \Delta IR = 0$ (1)

Table 1 also illustrates the pervasive linkages that tie the balance of payments into the domestic economy. Domestically produced goods and services that are not sold to domestic agents, private or public, must be sold abroad. Put the other way around, the sum of private savings (*S*) in excess of investment (*I*) and of public saving, i.e. government "saving"—tax collections (*T*) in excess of expenditure on goods and services (*G*)—represents the flow of net exports:

$$(S - I) + (T - G) = NEX \equiv EX - IM \quad (2)$$

Similarly, private domestic agents can increase their bond holdings $\left(\Delta B_{\mathrm{p}} > 0\right)$ only by acquiring bonds from the domestic government $\left(\Delta B_{\mathrm{g}}\right)$ or from foreigners ΔNF, either as foreign bonds or as repatriated domestic bonds. Bond sales among domestic private residents constitute a simultaneous increase in the bond holdings of some private agents and an identical decrease in the holdings of others that cancel out on aggregation.

$\Delta B_{\mathrm{p}} = \Delta B_{\mathrm{g}} + \Delta NF$, or

$$\Delta B_{\mathrm{p}} - \Delta B_{\mathrm{g}} = \Delta NF \quad (3)$$

Lastly, changes in the stock of money balances held by domestic private agents are accommodated either by the domestic government or by foreigners. The domestic banking system issues fiduciary "money" against reserves that consist mainly of bonds issued by the domestic government (*DC*) and of internationally accepted monetary assets (*IR*). Consequently, increases in private cash balance holdings (ΔM) in excess of domestic credit expansion (ΔDC) must reflect an increase in domestic public sector holdings of international reserves (ΔIR):

$\Delta M = \Delta DC + \Delta IR$, or

$$\Delta M - \Delta DC = \Delta IR \quad (4)$$

The pervasive structural interconnection between the balance of payments and the domestic economy is now apparent. To illustrate, a trade surplus ($NEX > 0$) requires positive national saving $(S_{\mathrm{n}} \equiv (S - I) + (T - G) > 0)$, i.e. net saving by the domestic private sector ($S - I > 0$) or by the public sector ($T - G > 0$) or both. The budget constraint of the domestic private sector necessitates that net domestic private saving is reflected in an increase in private holdings of bonds ($\Delta B_{\mathrm{p}} > 0$), or money ($\Delta M > 0$), or both. If the trade surplus is associated instead with domestic public saving (i.e., with a surplus in the government budget), then a commensurate reduction in the supply of government bonds (debt retirement) to the open market or to the central bank is required. In either case, the changes in domestic bond or money holdings must be accompanied by an equivalent increase in net foreign bond holdings or in international

reserves. These changes in net foreign asset holdings constitute the *quid pro quo* for the trade surplus, i.e., they represent the payment for the flow of net exports. In general, in order to maintain row and column balance, a change in any cell must be associated with offsetting changes in at least two other cells that, in turn, give rise to further adjustments necessitated by the respective balance requirements in the affected column and row.

Cross-border transactions are subject to the further symmetry constraint that net flow balances in the external accounts of the domestic economy must be matched exactly abroad. Exports or asset purchases of one country constitute imports or asset sales, respectively, of another. By assimilating all trade partners into one fictitious country designated Rest-of-the-World (ROW), it follows that the net cross-border flows of one country are identically equal to the negative net cross-border flows of the ROW. The home country and the ROW, therefore, share a common balance of payments that must satisfy the respective market balance constraints of both countries. Extending Table 1 with an equivalent ROW matrix such that the external balance columns are superimposed would illustrate this symmetry constraint. The extended general equilibrium matrix captures the meaning of the systemic international interdependence. Cross-border flows, and changes in these flows, are constrained by the requirement of mutually compatible imbalances, and adjustments, in the domestic sectors of both countries that are subject to the respective sectoral budget constraints at home and abroad.

The last column of Table 1 can be interpreted as the budget constraint of the external sector, generally referred to as the balance of payments constraint. Net imports of goods and services from abroad can occur only if foreigners agree to accept the IOUs that domestic residents offer in payment. These include bonds and other income-yielding financial instruments as well as international reserves. Conversely, acquisition of net foreign assets (capital outflows) must be funded either by a trade surplus or by payment with international reserves. The essence of the balance of payments constraint is the principle of "equality in exchange." For any period, net transaction flows in the three markets must add up (to zero) irrespective of the underlying behavioral motivation. In the absence of such behavioral information the constraint is structurally neutral: in principle, each of the elements can be determined autonomously or as a residual item. A simple exchange transaction can equally be motivated by the desire to gain a good or to dispose of a financial instrument. The particular resolution of that question of motivation imparts behavioral and structural content to the balance equations. Such resolutions are not grounded in immutable facts or in eternal verities, but reflect a specific choice of analytical perspective.

3. Analytical Perspectives of the Balance of Payments

Consistent with the formal structure of general equilibrium presented in Table 1, each of the three markets can in principle be considered as the principal domain for the autonomous pursuit of optimizing behavior. Preoccupation with resource use and allocation in the real sector of the economy naturally assigns this role to the goods market. From this particular vantage point, the financing of transactions constitutes the accommodating settlement of autonomous transfers of goods and services, irrespective of whether such payment is effected directly by money or indirectly through a process

of financial intermediation. Conversely, bonds or money may be the object of exchange. This alternative perspective is inspired by such observations as the remarkable secular increase in financial market activity unaccompanied by a commensurate increase in goods transactions or the flight from money during episodes of hyperinflation. Such observations suggest that financial assets need not invariably perform an accommodating role in transactions. Financial assets may be sought in their own right in order to exploit arbitrage and other profit opportunities or as protection against inflation when transactors seek to dispose of money by "escaping" into goods without having any interest in the use value of the goods.

3.1 The Goods Market and the Current Account

At the micro level, trade in goods and services is prominently influenced by the relative price of domestic and foreign-produced goods. At the macro level, cross-border trade reflects the interaction between domestic output and expenditure, or, equivalently, between saving and investment in the trading countries.

3.1.1 Elasticities and the Terms of Trade

The terms of trade (P_{EX}/P_{IM}) are the relative price of exportables in terms of importables. Changes in the terms of trade "switch" expenditure of domestic and foreign residents between these two categories of goods. On the supply side, they redirect resources between these two areas of production. The distinction between exports and exportables highlights the fact that goods produced for export are typically also consumed in the exporting country, so that exports constitute the excess supply of exportable production over their domestic consumption. Analogously, imports are the excess of domestic purchases of importables over the domestic production of import-competing goods. An increase in the terms of trade switches expenditure from domestic to foreign-produced goods and encourages domestic production of exportables. It raises the purchasing power of exports over imports in the sense that each unit of exports exchanges for a larger quantity of imports. The extent of the expenditure switch depends on the responsiveness to price—the price elasticity—of demand and supply conditions at home and abroad. Accordingly, this "elasticities approach" revolves around the relative price of exports and imports as the core determinant of the balance of payments.

Formally, the elasticities approach addresses balance of payments issues by concentrating on one single cell in Table 1, the net exports (*NEX*) cell in the northeast corner of the matrix. Financial flows, as accommodating payment flows, are of no intrinsic analytical interest. The main exception to this simplification is provided by long-term foreign investment flows. Insofar as these flows consist predominantly of direct investment—cross-border movements of capital goods, managerial and entrepreneurial services and the like—that exception does not involve matters of substance. Recognition of the real dimension of direct investment is reflected in the orthodox emphasis on the "basic balance," which assimilates the current account balance with the net long-term component of international capital flows to provide a measure of net cross-border resource transfers.

The elasticities approach can, therefore, be characterized as interpreting the balance of payments constraint in the following stylized form:

$$(\Delta NF + \Delta IR) = \{NEX \equiv EX - IM\} = f(P_{EX} / P_{IM}) \qquad (1a)$$

Equation (1a) is written in the conventional form, with the independent—i.e., autonomous, or forcing—variables listed on the right hand side of the equation and the dependent, or accommodating, transactions on the left hand side. Net exports drive the balance of payments. They are determined by the terms of trade, and financed by accommodating cross-border flows of financial assets. The effect of a change in the terms of trade on the (current account of the) balance of payments depends on the size of the relevant price elasticities. Difficulties of measurement leave room for conjecture about their true size, providing scope for the emergence of sentiments of "elasticity optimism" or "elasticity pessimism."

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Biographical Sketch

Dietrich K. Fausten is Associate Professor of Economics at Monash University, Melbourne, Australia. His research interests extend across macroeconomics, monetary economics, and international economics. He has published books and journal articles in the general area of open economy macroeconomics. His academic appointments include visiting and research appointments at various universities in Germany, supported by the Alexander von Humboldt-Foundation.