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THE NEW NEXUS AMONG TRADE, INDUSTRIAL,
AND EXCHANGE-RATE POLICIES

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The New Nexus Among Trade, Industrial,
and Exchange-Rate Policies

ABSTRACT

This paper explores the new interconnections between real and financial policies that affect international transactions. Among other conclusions are the following. (1) In a world of spatially mobile capital and reasonably accurate expectations, trends in international competitiveness and financial asset yields are tightly linked. Volatility in one causes volatility in the other. Policies that affect one affect the other. Financial policy influences real exchange rates and alters the pressures for trade and industrial policy. Trade and industrial policy causes overshooting of financial variables, and alters the pressures for financial policy. (2) Any failure to make real and financial policy stable, credible, systematic, and predictable generates volatile and costly signals to re-allocate resources. The problems with this are unpredictability more than inefficiency and resource disorder more than resource mis-order. (3) Stable, credible, systematic, and transparent exchange-rate policy can allay resource disorder by limiting deviations around economic trends. Economic trends can be enhanced in the presence of well-defined market imperfections by stable, credible, systematic, and transparent trade and industrial policies. (4) To reduce the likelihood of global resource disorder, real and financial policy options may involve retreating from multilateralism and from unrealistically binding rules. Sensible and timely alternatives seem to be aggressive bilateral peacemaking, non-inclusive coalition formation, and the formulation of credible "conventions" to govern government policy, both real and financial.

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1. INTRODUCTION

Interconnections among policies influencing trade, industrial structure, international payments, and exchange rates have long been a focus of development economics.¹ By contrast, these interconnections seem rarely addressed in developed-country analysis. This is presumably because they have been judged unimportant or quantitatively insignificant. Present trends in trade and payments policy, however, have generated new interest in these interconnections, and several recent papers have explored them (for example, Blackhurst and Tumlin (1980), Bergsten and Williamson (1982), and McCulloch (1982)).

This paper is also devoted to exploring these interconnections. Its title is a variation on Cooper's (1971) counterpart. Cooper's paper stands as a prescient exception to the usual dichotomous treatment of "real" policy and exchange-rate policy in developed countries.

One of Cooper's principal observations was that the absence of an adequate adjustment mechanism for international payments tempted nations to adopt distortionary trade and investment policies. These distortions were then justified on balance-of-payments or aggregate-employment grounds. Cooper's treatment of this observation was eloquent, but the observation predates his paper, and has enjoyed a continuing popularity as an argument for exchange-rate flexibility, for example:

...Flexible exchange rates eliminate the balance-of-payments motive for tariffs and should therefore facilitate further rounds of negotiations to lower trade barriers ((Dudley 1981, p. 264), ascribing the view to Richard Blackhurst).

¹For example, all the mid-1970's work on trade and exchange-rate regimes coordinated and summarized by Bhagwati and Krueger. See also Krueger (1978, 1981).

The great advantage of a floating exchange rate system was to have been that the adjustment would take place automatically through currency appreciations and depreciations, removing the need for otherwise undesirable trade and capital controls, and allowing governments to concentrate their policies on domestic economic needs. Thus if the adjustment process is working well, trade measures for balance of payments purposes are unnecessary and undesirable. (Frank, Pearson, and Riedel (1979, p. 15)).

One of the major arguments for a flexible exchange rate system... is that it makes the case for free trade clear and simple. If you have a flexible rate and you reduce tariffs, movements in the exchange rate will automatically protect you against having any adverse balance of payments effects, and therefore you are not exporting or importing unemployment (Friedman (1969, p. 118)).

Today's payments adjustment is arguably as inadequate as when Cooper wrote.² The characteristics of inadequacy have changed, but not the fact, nor the source. Inadequacy now appears most dramatically as exchange-rate volatility. It used to appear most dramatically as balance-of-payments crises (official-reserve volatility). Exchange rates are still misaligned for long periods in the view of many commentators. And the sources of misalignment and volatility are still both government initiative and private speculative response. Distortionary trade and investment policies that used to be defended on balance-of-payments grounds are now defended by reference to today's increasingly sharp swings in international competitiveness, real exchange rates, and current account balances.

On reflection, it may not be so surprising that pressures for aggressive trade and industrial policy are ultimately invariant to exchange-rate systems.

² Nor did Cooper imply, unlike Friedman and the others quoted, that broadly floating exchange rates would be more adequate. Cooper held out preferably for a system of gliding parities with presumptive indicators, or even for a system of flexible uniform taxes and subsidies on trade.

Over long enough periods of time ratios of wages, profits, and prices -- in one sector relative to another and in one nation relative to another -- are quite insensitive to exchange rates and monetary fluctuations. These non-monetary ratios are ultimately the real source of protectionist pressure. The monetary level of wages, profits, and prices doesn't really matter much. No worker, manager, shareholder, or creditor sees much inequity or need for government protection when his or her wages and income rise as fast as prices, and when foreign wages, prices, and incomes rise at the same rate.

But over shorter periods of time, exchange-rate fluctuations can cause real adjustment and injury -- in much the same way as monetary policy does. And when exchange rate fluctuations are recurrent, sharp, and unpredictable, they can lead to recurrent, sharp, and undesirable signals to reallocate resources (see, for example, Artus (1982, p. 6)). Unanticipated exchange-rate volatility has all the unfortunate features of unpredictable monetary policy. Both can send false, misleading, and wasteful price signals to economic decision-makers. Thus exchange rates are not irrelevant for trade policy even though they may be neutral in their long-run effects. Changes in the level or even the trend of an exchange rate may be innocuous; changes in its variance or predictability are not.

Nor are trade and industrial policies irrelevant for exchange-rate and payments adjustment. Industrial policies aim at far more than just sectoral-share targets. They also aim at temporal targets that are important determinants of exchange rates and international payments. Among such determinants are growth rates (influenced by industrial policies toward research and development activities and "high-technology" industry) and the end-use production mix between consumption goods, capital goods, and education (C and parts of I and G in the familiar national-accounts breakdown).

Trade policies in practice, although not necessarily in principle, often aim for the same goals. Of course their more narrow concern is with exports, imports, and foreign investment, all of which have obvious exchange-rate/payments effects. Both trade and industrial policies involve fiscal policy, debt management, and international transfer of rents, all of which in turn influence exchange rates, payments, and international indebtedness.

Little effort will be made below to differentiate trade policies from industrial policies, following Corden (1980, p. 167) and Blackhurst (1981, p. 361). Blackhurst argues that as governments become increasingly interventionist, much industrial policy is just a veil for trade policy. Conversely, the most potent political arguments for trade policy have almost always been industrial (maintenance of sectoral production and employment). As global markets for products become more and more integrated, it is harder to distinguish any unique motivation for one policy compared to the other. Indeed in the U.S., trade policy (which "we have always had") is essentially the stalking horse for industrial policy (which "we don't have," because of philosophical objections). We will use the terms trade policy and industrial policy interchangeably below.

In practice, some of the most important links between industrial policies and exchange-rate adjustment are one part politics and one part economics. In principle there need not be any links at all, political or economic. We discuss some practical political/economic connections in Section 2, and the conceivable absence of any connections in Section 3. Sections 4 and 5 are less sweeping. Section 4 is a compilation of ways that international monetary turbulence influences trade and industrial policies. Section 5 reverses the causation. It

sketches ways that trade and industrial policies influence exchange rates and international payments.

There are a number of conclusions in the paper. (1) In a world of spatially mobile capital and reasonably accurate expectations, trends in international competitiveness and financial asset yields are tightly linked. Volatility in one causes volatility in the other. Policies that affect one affect the other. Financial policy influences real exchange rates and alters the pressures for trade and industrial policy. Trade and industrial policy causes overshooting of financial variables, and alters the pressures for financial policy. (2) Whatever the other goals of real and financial policy, any failure to make them stable, credible, systematic, and predictable generates volatile and costly signals to reallocate resources. The problems with this are unpredictability more than inefficiency and resource disorder more than resource mis-order. The solution is to "re-order" resource allocation, not necessarily to reallocate resources. (3) Stable, credible, systematic, and transparent exchange-rate policy can allay resource disorder by limiting deviations around economic trends. Economic trends can be enhanced in the presence of well-defined market imperfections by stable, credible, systematic, and transparent trade and industrial policies. (4) To reduce the likelihood of global resource disorder, real and financial policy options may involve retreating from multilateralism and from unrealistically binding rules. But these should not be replaced by the vacuum of policy anarchy. More sensible and timely replacements seem to be aggressive bilateral peacemaking, non-inclusive coalition formation, and the formulation of credible "conventions" to govern government policy, both real and financial.

2. POLITICAL/ECONOMIC POLICY PARALLELS AND PROPOSALS

One of the most fundamental parallels between exchange-rate policies and industrial policies over the past 15 years is their common trend toward laissez-faire ordering of interchange among governments. A familiar American image may help to understand this parallel. "Frontier justice" has seemed increasingly to order both trade and exchange-rate policy. Under frontier justice, if a government can "get away with it," it should "do it." Strong governments survive prosperously; weak governments, tenuously.

The economic problem with frontier justice is unpredictability. More organized systems of justice regularize economic exchange, establishing boundaries for what qualify as voluntary transactions, rules governing the exploitation of market advantage, and sanctions to guarantee the enforcement of contracts. Frontier justice, by contrast, can destabilize economic exchange, becoming an irritant to the market rather than its lubricant.

Another way to describe frontier justice among governments is to call it policy anarchy and aggression. Tendencies toward such are always present, of course. And it may be unduly alarmist to forecast increasing realization of them. Yet some of the constraints that check policy aggression have become looser. U.S. hegemony³ has waned since 1945, however one defines it. And undesirable though it was in some ways, it clearly checked the scope for policy aggression, much as the frontier sheriff or U.S. marshall checked the scope for frontier justice. U.S. influence was, roughly speaking, once sufficient to make other nations "fall into line" in trade policy, exchange-

³ See Gilpin (1977), Keohane (1980), Kindleberger (1981), and Krasner (1976) for extended discussions of hegemony and international economics.

rate policy, and the international institutions that oversee them, but the U.S. seems currently less able and less willing to play that role. The awkward question this raises is: what happens on the frontier when the citizenry grows stronger and when the sheriff not only grows weaker, but begins to act just like everyone else? The problem facing both trade policy and exchange-rate policy is how to avoid frontier justice in inter-government relations -- how to re-order policy interchange.

Increasingly aggressive industrial and exchange-rate policies are to be feared more for their potential to disorder resource allocation than to mis-order it. To put the problem starkly, the law of the jungle (pure *laissez faire*) seems increasingly to dictate policy interchange among governments. Yet this is as haphazard a way of ordering policy transactions as it is of ordering market transactions. Even most conservative economists have in mind some particular legal structure of common-law conventions when they favor "free" markets and liberal trade policy. The threat that presently confronts both industrial and exchange-rate policy is that longstanding legal structures and conventions governing government behavior will be abandoned. Anarchy could conceivably begin to rule among governments. Uncertainty at best and chaos at worst could be the consequence for international trade and investment. The danger of the worst case can be appreciated by considering what happens to everyday commerce during civil disorder, when legal systems crumble and vigilante-ism waxes strong.

Some recent history of this threat is easy to document. Policy initiatives to minimize its future likelihood are more difficult to conceive.

Two events play an important historical role. One was an aggressive exchange-rate initiative that encouraged aggressive trade-policy initiatives.

The second was an aggressive trade-policy initiative that reinforced the earlier abandonment of conventions governing exchange-rate adjustment. The first was the unilateral abrogation by the U.S. of its commitment to gold-dollar convertibility in 1971. This was coupled with a swashbuckling "invitation" for the rest of the world to adjust their exchange-rate parities. And both were enforced by an aggressive application of trade policy in the form of the infamous ten percent import surcharge. The second event, or set of events, was the mammoth multiplication of world oil prices in 1973-74 and 1979-80. This amounted economically to a repeated application of beggar-our-neighbor export taxes by OPEC governments. Many of the implied revenues from these export taxes were recycled successfully. Those that were not caused transfer problems in much the same way that reparations payments did. The important role of oil as an input caused stagflation problems. Only some of the resulting structural and supply stresses could be alleviated by conventional aggregate demand policies; others were made worse. Sovereign governments naturally chose different macroeconomic policy mixes to reflect different menus of relief and endurance. These different policy responses often necessitated sovereign exchange-rate management.

The crucial question for policy is whether there are any sensible alternatives to the mutually devolving vortexes of aggressive trade and exchange-rate initiatives. It is easier to describe first what seems to be unlikely or undesirable alternatives. One is a return to hegemonic policy leadership in the fashion of the frontier sheriff. This seems out of the question for any government, barring a massive military realignment that might emerge from world war. Also out of the question is an extensive (that is, global) set of new "rules" governing trade or monetary relations. Examples of such include the return to a gold-based adjustable-peg system, and an exhaustive "ordering"

of global industrial and commodities markets. Such initiatives are at worst unappealing, and at best premature -- in the same way that the U.S. Constitution was premature before a decade's experience with the more loosely binding, less inclusive Articles of Confederation. Finally, oft-repeated exhortations to "more policy coordination" are only a pretender to a solution. They beg the fundamental question of why such largesse would be in the narrow national interest of aggressive governments. Policy coordination is a safe haven only in the eyes of commentators without any stake in policy aggression.

Blackhurst (1981, p. 369 *passim*) has addressed the fundamental question. He references the national benefits of a return toward "conventions" in governmental policy initiatives. Blackhurst seems to have in mind conventions that would at least order, but not bind, trade and exchange-rate policy. Governments themselves should be the constituents. Mutually agreed conventions protect governments from each other and also from domestic political constituents in narrow pursuit of trade and exchange-rate policies that serve their special interest at the expense of other constituents.

There are two important practical challenges in any such return toward conventions. One is to avoid over-ambitious promulgation of "rules" which, when broken, breed the now-familiar unpredictability, uncertainty, and incredulosity that disorders resource allocation. The second is to keep the resource and time costs of negotiation in check.

In these lights it seems timely to consider reinforcing recent retreats from commercial and financial multilateralism. Multilateralism may currently be too ambitious and too costly to maintain. Bilateralism, trilateralism, quadrilateralism, and so on, may be cheaper, more promising, and the most predictable route toward a new multilateralism. Initially, after all, the GATT, IMF, and World Bank were upheld by small, non-exhaustive groups of

nations. In the light of another metaphor, small neighborhood gangs may take on the obligations of turf-sharing agreements only after a conclusive demonstration of neighborhood peace and predictability that stems from agreement within the "exclusive club" of larger gangs.

What this may suggest practically is aggressive bilateral peacemaking -- the formation of mutually advantageous coalitions with like-minded governments. For example, the U.S. and Japan seem likely partners for a bilateral but possibly non-MFN trade agreement that would order trade along lines that are held closely in common. A successful U.S.-Japan trade agreement might then encourage other trade-policy combatants to sue for peace. Or for example, the U.S. seems currently in a position to bargain for European trade-policy concessions in return for a recommitment on its part to exchange-market intervention. U.S. intervention can be argued to have at the very worst innocuous effects on microeconomic allocation and macroeconomic prosperity. At best it might purge the economic system of large unanticipated exchange-rate variations that may be mistaken for resource-allocational signals. The case for stable, predictable monetary policy to avoid resource-allocational mistakes and disorder ought to apply with equal force to stable, predictable exchange-rate management.

The general goal of any return toward convention in government policy interchange is to re-order resource allocation, or perhaps more accurately to allay the imminence of disorder. Stability, credibility, and predictability are crucial pre-requisites for both new trade policy and new exchange-rate policy (Krueger (1981, p. 91), Grossman and Richardson (1982, pp. 20-27), Artus (1982, pp. 10-11)). Stable, credible, and transparent trade policy is able to influence trends in resource allocation. Stable, credible, and

transparent exchange-rate policy is able to influence deviations around those trends. Ideal trends with minimal divergences are the obvious targets. Trend mistakes are costly not only for the usual reasons, because resources are continuously less productive than they would be in the "right" place, but also because irreversible human and physical investment is often wasted, and because retraining and retooling costs are ultimately unavoidable. Divergence mistakes are costly not only because of human aversion to risk, but also because temporary competitive imbalances can generate empty shelves and storage lots in one location, excessive inventories in another, and resource-diverting arbitrage that transfers goods from the latter location to the former. The three respective resource allocational costs associated with divergence mistakes are waste from rationing, waste from excessive stockpiles,⁴ and waste from unnecessary transportation and redistribution.

In a peculiar way, the goals of stability, credibility, and predictability amount to making trade and exchange-rate policy more endogenous and less exogenous. Endogenous policy in this context simply means systematic policy. Policy may still be quite flexible and responsive to circumstance. But it will be governed by conventions and behavior that are stable, self-enforcing, and

⁴Stockpiles are costly both to maintain, and in a growing economy, to build up at steady-state growth rates. Inventories can be excessive in the sense that they waste resources on maintenance, and in the sense that they force regular incremental additions to stockpiles that could otherwise be consumed.

readily apparent to economic decisionmakers.⁵ Exogenous policy in this context, typical though it is in standard economic analysis, amounts to arbitrary, unsystematic, and unpredictable policy.

⁵In addition to the resource-allocational benefits of stable, credible, and transparent policy that are sketched above, Richardson (1982) and Grossman and Richardson (1982, p. 24) observe its potential for generating a kind of "leading adjustment" to policy. Leading adjustment has the virtue of being controlled by expected prices, costs, and profits. All of these are flexible and able to contribute to market clearing. None of them seem likely to be distorted in any systematic or undesirable way. Thus resource-allocational "adjustment costs" associated with policy that can be forecast and that is transparent may in general be minimal. There appear, however, to be two important situations in which this generalization may be misleading. Market power on the part of sector-specific factors (e.g., a strong union in an import-sensitive industry) may lead them to exploit systematically transparent policy to take further advantage of their monopoly position (e.g., to raise wages unduly). And foreign policy authorities in retaliatory response may exploit systematically transparent policy to take advantage of any market power they have. Gaming situations such as these, however, suggest only that stable, credible, and predictable policy response should be developed to deal with domestic market power and foreign policy retaliation.

3. PURE ANALYTICAL APPROACHES AND THEIR LIMITATIONS

A familiar position in "pure" analytic approaches to trade and industrial policies is that exchange rates and payments adjustment are red herrings. In the most familiar general-equilibrium models exchange rates are ignored and payments adjustment is taken for granted. Exchange rates are ignored because they are assumed to be the relative price of two moneys, both of which are "veils" having no real effects. Money does not matter, and neither do exchange rates. They are all "neutral". An exogenous change in their value has no ultimate impact on production or consumption, and therefore no ultimate impact on trade or industrial policy. Trade or industrial policy may by contrast, have some impact on exchange rates and monetary variables, but the "real" consequences of these "real" policies will be invariant to their monetary consequences. This seems to be what Blackhurst and Tumlin (1980, pp. 3, 13) have in mind when they remark, "The economic value of trade liberalization is not affected by increased variability of nominal exchange rates... exchange rate fluctuations in no way reduce the importance of efforts to liberalize world trade."⁶ This is also the regime characterized by Corden (1980, p. 174) as having a vertical long-run Phillips curve.

As to payments adjustment in pure analytic approaches to trade and industrial policies, it is implicitly assumed to be maintained automatically. The automatic maintenance mechanisms are exchange-rate flexibility, stabilizing official or private trade in assets (as under the gold standard), or a com-

⁶For a strongly dissenting view, based on less familiar general-equilibrium models, see Chipman (1978, 1980).

bination of all.⁷ Trade and industrial policies obviously cannot cause exchange-rate or payments "problems" under such assumptions. For that matter, nothing else can either.

So under conventional analytic approaches it makes about as much sense to write a paper on "Industrial Policy, Floating Exchange Rates, and Payments Adjustment," as on "Industrial Policy, Variable Tides, and Shoreline Adjustment." Purity rejoices and Dichotomy reigns supreme.

Fortunately for the mandate of this paper, one need only add a few elements of reality to draw richer conclusions about the interaction of trade and exchange-rate policies. Some of these conclusions bear extended discussion and are treated in Sections 4 and 5 of the paper. Other conclusions are very general and will be treated quickly in this section.

To start, analysts agree in general that "money can matter" to real economic decisions for as long as some market failure persists. For example, domestic wages and prices may adjust sluggishly to clear markets. Exchange rates will matter for real decisions during such wage-price sluggishness. Temporary but persistent undervaluation (relative to a currency's ultimate equilibrium value) should encourage exports and protect domestic import competitors, leading Corden to dub it "exchange-rate protection" (Corden (1978)). Temporary but persistent overvaluation can lead to increased pressures for compensatory protectionist policy by injured tradeables producers (Bergsten and Williamson (1982)).

⁷ It may be surprising to some general-equilibrium trade theorists to learn that they too are macroeconomists, always implicitly writing down a rudimentary and convenient macroeconomic structure on which their "real" analysis is based.

Furthermore, exchange-rate misalignments may be sharper, more frequent, and more enduring the more that wage-price sluggishness stands in the way of market clearing. The reason is that the exchange rate and other flexible variables must "do the work" of sluggish prices. Excess supplies and demands spill over into unrationed markets like the foreign exchange market, causing greater unpredictability in flexible prices there. Trade and industrial policies may even aggravate this spillover unpredictability of exchange rates (or of official reserves, or of exchange control adjustments) if they administratively ration suppliers and demanders. Administrative rationing is of course one tool of production quotas, import licensing, voluntary export restraints, and mandatory performance requirements. The counterpart to the policy-induced rationing is increased spillovers of frustrated supplies and demands into unrationed markets. And among these unrationed markets are prominently the international markets that include and are mediated by the foreign exchange market.

Distortions other than wage-price sluggishness can also make exchange rates and money "matter." Take for example intertemporal and capital-market imperfections that set practical limits to the losses consistent with any firm's continued survival. With such imperfections, an increase in unanticipated exchange-rate volatility may cause increased incidence of financial insolvency for firms that are still viable in terms of underlying trends. If insolvency is a boon, implying only a transfer of ownership and a shaking out of the least viable operations in the still viable firm, then there is no cause for alarm. But if insolvency is a bane, implying waste of resources through indivisibility or immobility, then greater frequency, amplitude, and unpredictability of exchange-rate deviations around their trend is an impor-

tant problem. Even governments can become "insolvent" due to the same capital-market imperfections. Increased incipient exchange-rate volatility can exhaust not only owned official reserves but borrowed official reserves as well. This leaves a government with no recourse except to abandon the foreign exchange market entirely or to apply strict distortionary controls. Financial crises then do have real effects, as illustrated most recently in the Mexican dilemma.

Market failure is at the core of each of these illustrations of substantive interaction between trade-industrial policies and financial/exchange-rate policies. The first illustrations rest on the failure of markets to clear at a moment in time. The second rests on the failure of markets to clear over time. In general, market failure in one domain can provide a presumptive case for remedial action in some other domain, albeit of a second-best kind. For example, real distortions in the inter-temporal trade carried out in global capital markets can be reduced greatly by stable international banking and financial arrangements. What imperfections remain in the global capital market may provide economically sensible grounds for infant industry protection (Baldwin (1969)). They may also provide grounds for industrial policy aimed at avoiding the resource waste associated with "unemployed" immobile capital, or associated with missing insurance markets that cause irreversible human investment decisions (Grossman and Richardson (1982, pp. 7-8, 22-23), Eaton and Grossman (1981)). Predatory trade and industrial policy provide another example. Such policies in one country create market distortions in others. The ideal retaliatory response (or threat) may lie in exchange-rate manipulation, in some other financial intervention, or in completely unrelated domains rather than in the threatened markets themselves. This is because the retaliatory

response must be credible to be effective. It must therefore emanate from sectors or activities where the injured country has a strong market position rather than a vulnerable one.

We turn in the next two sections to more detailed conclusions about the interaction of trade, industrial, and exchange-rate policies.

III. SOME IMPACTS OF INTERNATIONAL MONETARY TURBULENCE ON TRADE/INDUSTRIAL POLICY

The confluence of increasing capital mobility and increasing recourse to floating exchange rates can be argued to have brought unique pressures to bear on trade and industrial policy.

Increasing spatial capital mobility can be an independent source of financial shocks to the "real" international economy. It can also create a sounding board transmitting real and financial shocks in one region into reverberations in others. Financial markets tend to reflect "news" faster than goods markets or factor markets. And some bits of "news" encourage significant portfolio reallocations across boundaries and currency denominations.

That is where exchange-rate systems enter. When pegged exchange-rate systems are credible and work, international asset-market fluctuations have comparatively minor effects on competitive and comparative advantage. But when pegged-rate systems fail, then fluid financial capital may force exchange rates to oscillate markedly around trends consistent with "real-trade fundamentals", distorting and destabilizing real trade patterns. It is useful to recall some familiar features of exchange-rate systems in order to illustrate these points.

Under credible and successful pegged-rate systems, official reserves absorb a large portion of the fluctuations in mobile international financial

capital.⁸ That is to say, official reserves are volatile. Money stocks are potentially volatile as well, depending on the importance of official reserves in the monetary base and the potential for sterilization. By comparison, exchange rates and current account balances are not volatile, although they may exhibit secular trends, for example, parities may creep or glide by small increments over time. Exchange rates and current-account balances may also exhibit "misalignment" (Bergsten and Williamson (1982)) -- protracted periods of departure from normal or long-run values. During such periods, official reserve stocks may exhibit secular trends as well as volatility.

Under floating and conservative intervention systems, exchange rates absorb a large portion of the fluctuations in mobile international financial capital. That is to say, exchange rates are volatile. Their volatility induces accommodating adjustments in trade flows or other capital flows. Adjustment of trade flows takes place for familiar reasons. Adjustment of

⁸Two problems are often said to confront any regular and significant government intervention in today's foreign exchange markets. One is that official reserves are inadequate to cope with the massive cross-boundary portfolio reallocations. The second is that no matter how large official reserves were, rational expectations of the government's intervention, based on knowledge of its policy reaction behavior, would cause the intervention to be ineffective. It is rarely observed that both of these problems are caused in turn by a fundamentally deeper problem: the incredulousness with which the market greets government exchange-rate targets and commitments. Suppose that governments were really believed in their exchange-rate commitments, and that they really took policy action consistent with those beliefs in order to ratify them. Then the payments mechanism would work much as it did under the gold standard, although not necessarily with fixed exchange rates. Massive portfolio re-allocation might indeed take place. And the government's policy reactions would be indeed transparent to rational forecasters. But any massive capital movements based on rational expectations would themselves stabilize the exchange rate around the government's credible target. Little actual intervention would be necessary. By contrast, if the target is incredible, no amount of government intervention will succeed. The real problem is thus the stability and credibility of government financial policy, as discussed in Section 2.

capital flows takes place because of exchange-rate related capital gains or losses, and because of the reversal of speculative asset positions as exchange rates change. Exchange rates are almost certainly more volatile than under aggressive and credible intervention. Exchange rates may also exhibit secular trends, and official resistance to the exchange-rate trends will create trends in official reserves. Otherwise official reserves are relatively stable.

There is obviously a trade-off across exchange-rate systems between official reserve volatility and exchange-rate volatility. The former has little direct influence on trade and industrial policy; the latter, much.⁹ It can be argued that the strongest political pressure for protection emanates from specific sectors of the economy. Each industry views itself as having very little influence over exchange rates. (Corden (1980, p.176) suggests that industries think of their movement as "acts of God".) Yet industries are painfully aware of exchange-rate influences on them. Depreciation and appreciation due to asset market flux cause ebbs and flows in competitiveness, cash flow, and long-term economic viability.¹⁰ To the extent that there are intertemporal capital-market distortions that set limits to the maximum losses consistent with any firms' survival, unanticipated exchange-rate volatility may heighten corporate, sectoral and ultimately collective political pressure

⁹ By contrast, official-reserve swings have considerable direct influences on financial markets themselves, altering money supplies, bond stocks, and asset prices. These may have indirect effects on trade and industrial policy, but rarely any important immediate influence.

¹⁰ Deardorff and Stern (1982) empirically estimate some of the sectoral U.S. effects of dollar appreciation. Marsden and Hollander (1981) show for Australia how flux in the nominal exchange rate overwhelmingly accounts for flux in sector-by-sector international competitiveness.

for protection, especially of a quantitative kind. Quantitative trade and industrial policies shrink the variance of international competitiveness, as well as changing its mean. Tariffs (more accurately ad valorem tariffs) affect only the mean.¹¹ The impetus for these sectoral protectionist pressures is of course the fluctuations in a sector's "real" exchange rate, the ratio of foreign to domestic commodity prices in comparable currency units.¹²

This argument suggests only that pressures for government intervention in trade and production will be greater given volatile exchange rates. It does not suggest that international trade will be discouraged by floating. The argument is thus consistent with the oft-quoted failure to find convincing correlation between exchange-rate volatility and international trade (Hooper and Kohlhagen (1978), referenced for example by Levich (1981, p.15) and Artus and Young (1979, p.682)). The explanation for this consistency is that current trade and industrial policies are as likely to be pro-trade-biased as anti-trade-biased. Examples of pro-trade biased industrial policies include: export performance requirements, indirect export subsidies, export tax relief, concessionary export financing, disguised encouragements to dump, and official cultivation of scale-intensive and technology-intensive industry that necessitates reliance on international markets. Increased export promotion and

¹¹This may be a reason to expect relatively more recourse to quantitative protection under floating exchange rates, and relatively less resource to tariffs, than would be typical under pegged rates.

¹²Some define real exchange rates as domestic ratios of tradeables prices to non-tradeables prices (e.g. Neary and Purvis (1981)). Most of the observations in this section have straightforward correspondents in this conception as long as tradeables prices follow exchange rates more closely or quickly than non-tradeables prices.

"export protection" move global production and trade patterns toward their free-trade norms, and potentially even past them.¹³

Of course some exchange-rate variation is welcomed by interventionist interests. For short periods of time, governments can sometimes protect tradeables producers by discretionary leaning toward currency depreciation. This is accomplished euphemistically by "replenishing depleted official reserves" or "building them up 'for a rainy day'". Corden (1978) and a number of subsequent writers have described this as "exchange-rate protection". It is limited in scope by the credibility of the government's exchange-rate targets. Incredible targets generate ineffective intervention and no exchange-rate protection, as described in note 8. And even with scope, the effectiveness of exchange-rate protection is limited in time to the period during which wages, prices and other nominal magnitudes remain sluggish. Exchange-rate protection is not a viable policy, for example, where wages are indexed fully and quickly to prices, and where commodity arbitrage causes prices to adjust rapidly to exchange rates.

An extension of the idea of exchange-rate protection has been recommended by several recent commentators. It is to use official-reserve intervention on both sides of the market to stabilize average (aggregate) real exchange rates around their trends. The idea has some appeal as a means of avoiding the unanticipated real exchange-rate divergences that destabilize and distort

¹³ Other explanations for the failure to find much discernible impact of exchange-rate variation on international trade or investment include: (1) possible encouragements to trade based on foreign direct investment, vertically to avoid input-price variation, and horizontally to exploit arbitrage of the produce-where-cheap, market-where-dear variety (Artus (1982, pp. 6, 8), McCulloch (1982, pp.10-11)); (2) the large proportion of modern international trade and investment carried out by genuinely multinational corporations with no strong currency habitat, so that exchange-rate variation becomes less important to their real decisions.

resource allocation. What this proposal comes close to in a world with spatially mobile financial capital and with reasonably accurate forecasting of expected inflation, is simultaneous stabilization of the average "real" interest rate differential. When nominal interest parity, Fisherian interest parity, and mean forecast accuracy all hold, the average (aggregate) time trend in real exchange rates is approximately equal to the average international difference in real interest rates:¹⁴

$$(1) \quad \dot{e} - \dot{p}_d + \dot{p}_f \approx r_d - r_f$$

where

\dot{e} represents the time rate of change of any exchange rate (domestic currency price of foreign currency);

\dot{p}_d, \dot{p}_f represent average domestic and foreign inflation rates for goods;

$\dot{e} - \dot{p}_d + \dot{p}_f =$ a measure of the average time rate of change of real exchange rates;

r_d, r_f represent measures of domestic and foreign "real" interest rates.

Thus to stabilize real exchange rates around their trend is to stabilize international differences in real interest rates. This requires intervention policy aimed at moderating asset-market shocks and stochastic variation both at home and abroad. It is notable that from the left side of the equation such policy would look like trade or industrial policy, but from the right side it looks like financial policy. With spatially mobile capital, the two are closely linked. That is an important characteristic of today's international economy.

The band of approximation around "equation" (1) is narrower the closer the

¹⁴"Real" interest rates are thought of as the difference between nominal interest rates and reasonably accurate forecasts of inflation. Nominal interest rates differ internationally under spatial financial capital mobility by reasonably accurate forecasts of the trend movement in exchange rates.

spatial links between financial capital markets and the tighter the accuracy of economic forecasts. When it is reasonably accurate, "equation" (1) serves several purposes. It demonstrates the linkage between what is usually considered a concern of financial policy -- the divergence of real interest rates from global levels -- and what is usually considered a concern of industrial/trade policy -- trends in international competitiveness. It also demonstrates that small, financially open nations may have on the one hand little policy control over real exchange rates (so that the real-exchange-rate targetting suggested above would be infeasible) and on the other hand little need for such policy control. The volatility of real exchange rates for such countries may be quite small, and their mean value may approximate purchasing-power-parity norms, since international arbitrage seems likely to minimize divergences of home real interest rates from dominating global levels. Such "real-interest arbitrage" might be most likely where multinational corporate presence is prominent in the small, financially open country.

Equation (1) serves also to demonstrate how important trade issues can arise from the inter-temporal considerations associated with real interest rates. Divergences between home and foreign real interest rates may be as significant an influence on trade as trade policy itself, especially in a growing economy. Trends in and shocks to real interest rates can change the commodity composition of trade because they alter real exchange rates, with subsequent shifts in the margin of comparative advantage among goods.¹⁵

The most widely appreciated illustration of this is of course the "overshooting" phenomenon, summarized and surveyed by Schadler (1977) and

¹⁵ Trends in real interest rates can even change international competitiveness within sectors such as autos and capital goods, because capitalization of borrowing costs accentuates the dollar value of natural price differentials.

Levich (1981)).

The sequence of overshooting linkages between financial and real variables is familiar. The sequence begins with an unanticipated shock to a financial variable (Dornbusch (1976), Kouri (1976)) or to a real variable (Neary and Purvis (1981)). Unanticipated shocks include announcements of future developments (Wilson (1979)), which once announced become anticipated future developments, and unexpected revisions of previous announcements. All these unanticipated shocks cause rapid adjustment of financial variables -- asset valuations, interest rates, and nominal exchange rates. The rapid adjustment of financial variables then becomes itself a shock, to which some real variables respond rapidly at first and subsequently with slow unwinding. Most important for trade and industrial policy are the ways that real interest rates and nominal exchange rates affect trends in international competitiveness, as revealed in equation (1). Unanticipated changes in the level of a monetary stock, for example, cause oppositely signed changes in real interest rates (r_d); unanticipated changes in the rate of monetary expansion cause similarly signed changes in the rate of currency depreciation (\dot{e}). Both cause sudden movement of real exchange rates and competitiveness, with subsequent slow unwinding.

Some aspects of overshooting linkages are less familiar than those just discussed. First, real exchange rates really overshoot in response to monetary/financial turbulence. Virtually any temporary divergence of real exchange rates from their real norms should be classified as overshooting if it is caused by a monetary shock. That is because the ultimate equilibrium values of real exchange rates, like all price ratios, are relatively insensitive to monetary variables.

Second, monetary policy innovations are not the only shocks that cause overshooting in real exchange rates and sectoral competitiveness. Overshooting is just as readily a result of unanticipated shocks to money demand (Artus and Young (1979, p.670), Levich (1981, p.25)) and to stock equilibrium in other financial markets. Among such unfamiliar causes of overshooting are bank and brokerage failures, unexpected features of default and rescheduling arrangements, unforeseen beginnings and ends to "bubbles," unpredictable out-workings of international "currency substitutability," and unanticipated portfolio shifts among official-reserve assets of different maturity and currency denomination.¹⁶

Third, real shocks themselves can cause financial-market reactions that feed back in turn on the real economy, in the form of overshooting and volatility. Examples include unexpected business failures, animal spirits in capital formation, and exogenous resource-price shocks that change the capital value of resource ownership.¹⁷ Even unanticipated cyclical movements in real output can cause financial-market reactions and subsequent overshooting. Unforeseen recessionary shocks reduce the stock demand for liquid assets and real interest rates. These will in turn cause over-depreciation of domestic money and even larger over-depreciation of the real exchange rate. With no further shocks, the nominal exchange rate would gradually return part way toward its former value and the real exchange rate would return all the way.¹⁸ Unforeseen expansionary

¹⁶ See Roosa et al. (1982) and Multiple Reserve Currency Study Group (1982) for other ramifications of multiple-currency holdings of official reserves.

¹⁷ Examples abound in the literature on the "Dutch disease." References abound in, for example, Corden and Neary (1982) and Neary (1982).

¹⁸ Therein lies a possible contributing explanation for the well-known hypersensitivity of the trade balance to cyclical fluctuation. A nation's trade balance may vary counter-cyclically not only for the usual reasons, but also because its international competitive position varies in an exaggerated counter-cyclical way due to overshooting.

shocks will have, of course, symmetrically opposite influences.

Given the large inventory of sources for overshooting, it is no wonder that concern has mounted over the recent volatility of exchange rates and real interest rates. Proposals abound for improved exchange-rate management and increased policy stabilization of interest rates, especially on the part of governments in the largest financial markets.

The concern becomes even more credible when each source of overshooting is seen not as an isolated, unique event, but realistically as a set of recurring, unforeseeable stochastic impulses. Financial variables will then overshoot unpredictably on both sides of equilibrium. Induced overshooting and volatility of "real" variables may be even more pronounced. Equilibrium may be less a position of rest and more an [^]entrepôt for real exchange rates, international competitiveness, and relative prices of tradeables to non-tradeables or capital goods to consumer goods. This is a disquieting scenario. Stable equilibria are always assumed to constrain the economic system at its extremes, tugging it back most aggressively when it was furthest away. But equilibria have also usually been conceived as dwelling places. It is not clear what happens in an economy with so much recurrent volatility that equilibrium becomes just a transit point. The most dangerous potential answer is unpredictability and disorder in resource allocation. Inefficiency and distortions might increase too, but seem by comparison much less threatening.

Some commentators on overshooting have observed how pervasive it is among all economic markets, and how deep are its historical roots in economic analysis (for example, Levich (1981), Neary and Purvis (1981)). The implicit or explicit message is that exchange-rate volatility is similar to the volatility in all asset prices, and we should worry no more about one than the other. While

the description of exchange rates as asset prices is undeniable, the prescription to treat them the same as other asset prices seems dubious. Exchange rate volatility seems on the face of it to affect more industrial decisions more dramatically and more immediately than volatility in prices of equities, bonds, or commodities futures. Variation in other asset prices seems to have its most important effects on future resource allocation and investment.¹⁹ Variation in exchange rates seems to have important current as well as future effects.

The most compelling reason why volatility in exchange rates has comparatively more scope for pernicious real mischief is that exchange rates are relative prices of media of exchange, not just stores of value. When the relative price of exchange media vary, so will the terms of any real transaction requiring those exchange media to be bartered.²⁰ Almost all current (as well as future) international transactions involve such a barter. There is no medium of exchange for the national media, no super-medium.

The point is that foreign exchange markets serve more purposes than just those served by all asset markets. This makes price variation in the former more important than price variation in the latter. Foreign exchange (spot claims in foreign money) is different from other financial assets for exactly the same reasons (whatever they are!) that money (whatever it is!) is different

¹⁹ For example, variation in the ratio of the market value of capital to its replacement value ("Tobin's q") has its most important effects on the future capital stock, through cumulative effects on current investment.

²⁰ The terms of the real transactions may admittedly be only temporarily altered, as discussed above and in section 4. The period during which this happens is influenced again by the duration of sluggishness in the adjustments of wages, prices, and expectations.

from other financial assets. Public interest in stock markets and futures markets would understandably and properly rise if legal tender were to be re-defined as contracts for pork bellies or baskets of ownership certificates to Dow-Jones Industrials. Concern over pork bellies and the Dow-Jones average might become fit fare for every family's dinner conversation. Opposition would spring up immediately to the capricious signals for resource allocation that were generated by the vagaries of pricing on Wall Street and in the pits of the Chicago Mercantile Exchange. "That's all very well for speculative financial instruments," people might be heard to say, "but this stuff bouncing around from hour to hour is legal tender!"

This discussion has been aimed at documenting the ways that international monetary turbulence elicits sympathetic real turbulence and pressures on trade and industrial policy. The last section of the paper reverses the causation. The chief implication of this section for international monetary policy is that its credibility and predictability be enhanced. To do this successfully requires increased credibility and predictability of domestic monetary policy. And to do this successfully requires some change in monetary targets and technical procedures (to enhance predictability), but more importantly an improvement in the systematic will, transparency, and endogeneity that govern monetary control. Given them, any one of a number of international monetary reforms might succeed well.²¹ Without them, all seem likely to fail.

²¹See Bergsten and Williamson (1982, pp. 23ff.) for a number of suggestions, including unsterilized pegging, management of intervention by reference rates, and capital controls, including real-interest equalization taxes.

5. SOME IMPACTS OF TRADE/INDUSTRIAL
POLICY ON INTERNATIONAL
MONETARY TURBULENCE

It is obvious that trade and industrial policies aim at sectoral targets. They attempt to influence the commodity composition of output and trade. It is less obvious that trade and industrial policies aim at temporal targets. They attempt to influence current-account balances, capital formation, and growth rates. To achieve their sectoral and temporal targets, trade and industrial policy inevitably employ not only budget-balancing taxes and subsidies but also fiscal, monetary, and debt management policies.

Exchange rates and international payments are sensitive to both sectoral and temporal targets of real policy, but especially so to the temporal targets. These targets and their corresponding instruments influence levels, trends, and volatility of exchange rates, official reserves, and payments balances on current and capital account.

The importance of temporal targets in trade and industrial policy is documented, for example, in Mutti (1982, pp. 9-15). Government capital subsidies to industry range from 2 to 10 times as large as government operating subsidies in major countries. Without exception, industrial subsidies generate benefits on balance to employment of capital. Or, for example, government export promotion is typically a sectoral policy carried out by temporal tools. These include concessionary loans, loan guarantees, and sometimes even equity participation. It is no surprise therefore that such hybrid sectoral-temporal policies have hybrid consequences. Does export promotion really strengthen a currency and bolster reserves? The usual affirmative answer rests on sectoral incidence alone. A definitive answer must also rest on the policy's temporal incidence -- how the export promotion is financed.

The effect of industrial policies on levels and trends of financial variables is almost always conditional. One important condition is the type of industrial policy being considered. Two types are often distinguished. One is a "pick the winners" or "positive-adjustment" policy; the other is a "protect the injured" or "defensive" policy (e.g., Corden (1980), Blackhurst (1981)). Many commentators identify export-development policies with the first type and import substitution with the second (e.g. Krueger (1981)). But there are enough counter-examples of successful import replacement and of threatened export sectors clamoring for protection to make the usual identification dubious, especially on the margin.

A successful "positive adjustment" policy should strengthen a country's currency. One of the most familiar reasons for its success is being able to overcome inter-temporal capital-market imperfections. These imperfections may be associated with imperfect information, with risk that exceeds corporate-insurer or creditor ability to bear, and other causes of market failure. Over time the wisdom of a successful "pick the winners" policy will become appreciated in the integrated global capital market. For as long as this learning takes, financial investors, some of them foreign, will be adding assets to their portfolios that carry a stake in the winners' winnings. So will domestic investors, foregoing some foreign investments that they might otherwise have made. Those who add the assets earliest realize the largest capital gains over the period of information diffusion. They also tend to be the best informed and/or most daring investors. When information about the successful policy is sufficiently diffuse, extraordinary capital gains cease. Only normal returns will be made from then on. But divestment will not thereby be encouraged and none will normally take place. The important implication for this paper is that investors will end up holding an indefinitely

larger stock of claims than otherwise on the country that picked the winners. Increased stock demand for selected domestic assets will then lead to arbitrage among the country's other assets. Arbitrage will cause almost all asset prices to be higher than otherwise, too. Among these other asset prices is the foreign-exchange-market value of local currency.

Thus the ultimate monetary effect of a successful "pick the winners" strategy is an indefinitely stronger currency and/or an indefinitely more favorable trend in official reserves. During the period of information diffusion the exchange-rate and official-reserve effects will be quantitatively even more marked. This is definitionally overshooting, and must take place because transitional capital-account surpluses must be somehow financed during this period.²² The transitional impacts will of course be tempered if the winner industries are biased toward exports or import replacement. Incipient current-account surpluses would be financed by even greater transitional official reserve absorption, or else they would be reversed by even greater transitional exchange-rate appreciation. Such appreciation would have to create the current deficit necessary to fund the transitional capital inflow.

A "defensive" industrial policy has exactly the same effects if it avoids temporary insolvency and capital losses in firms that are viable in the long run. But a "defensive" policy that delays the demise of non-viable enterprise has exactly the opposite effects. So does an unsuccessful "pick the winners" policy, in which losers are mistakenly identified as winners. Industrial policies in these last two cases result in a permanently weaker currency and/or less favorable trend in official reserves. In the transition period during which the global capital market gradually develops its bleak assessment of the

²²The details these transitional and steady-state conclusions are sketched in a number of recent papers by Jeffrey Sachs and by William H. Branson.

government's policy, depreciation and official-reserve losses will be even greater than ultimately. The reasoning is symmetric to that sketched above.

It can readily be seen that raw industrial policies, whether successful or not, cause overshooting of exchange rates and of trends in official reserves. In this sense they may contribute to exchange-rate and payments volatility as well as influencing levels and steady-state trends. Yet industrial policies are not developed exogenously in a vacuum. Some are conscious attempts to vitiate structural adjustments that are themselves unanticipated real shocks, and that themselves cause overshooting. The international monetary system may be made less turbulent, not more, by these trade and industrial policies. Examples include policies that attempt to offset oil-price shocks, real-wage aggression, and stagflationary influences of social policies (such as higher payroll taxes, environmental standards, and occupational safety and health mandates).

To argue matters another way, the chief cause of international monetary turbulence during the past decade may well have been the unanticipated stagflationary shocks described above, coupled with the unanticipatable government policy responses to them under apparently new rules of the game. Trade and industrial policies that are consciously counter-stagflationary should then reduce international monetary turbulence. Examples include supply-side policies aimed at stimulating modernization, research and development, and capital formation at the expense of consumer-goods production. Many such industrial policies are, however, unfunded, and lead to larger government budget deficits. Crowding out may then remove much of their intended counter-stagflationary influence.

Even worse, many industrial policies are themselves stagflationary. They are more clearly described as counter-productive. By affording

ever larger measures of protection to firms and workers in inefficient and declining industries, they reduce productivity growth in exactly the same way as technological regress. Worst of all, they often create opportunities to earn rents and unconditional windfall gains on the privileged position that industrial policy provides. Resource diversion away from normal economic activity is the consequence. Resources are devoted instead to "rent-seeking" (Krueger (1974)), lobbying (Brock and Magee (1981)), and suing the government for (industrial) injury. Counter-productive industrial policies like these will be catalysts for international monetary turbulence rather than cures for it.

One conclusion is that for trade and industrial policies to alleviate international monetary turbulence, they must be motivated by economic dollars and sense. They must be either consistent with private-market assessments or persuasively corrective of them. Policies motivated by anything else--by politics, national prestige, or irrational attachment to romantic industry (e.g., "high-tech")--will destabilize international trade and payments (Grossman and Richardson (1982, p. 22)). Markets have an inexorable way of disciplining politicians, nationalists, and romantics. But a concomitant of discipline is turbulence.

Finally, it may seem doubtful that the international monetary impacts of trade and industrial policy are quantitatively large enough to worry about. But recent empirical calibrations of mixed real and monetary models (Hool and Richardson (1981), Richardson (1982), Deardorff and Stern (1980)) suggest the opposite. At least sometimes the impacts are large. The intervening variables that trade and industrial policy influence directly are: effective prices of imported and exported intermediate goods;²³ international transfers

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See Johnson (1966), Deardorff and Stern (1980), and Eichengreen (1981).

of rent-like revenues associated with voluntary export quotas and orderly marketing agreements; and capital gains and losses on the equity value of domestic industries. Changes in these variables are what directly and often significantly affect exchange rates and payments.

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