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EXCHANGE RATE POLICY AND EXPORT PERFORMANCE:
A COMPARATIVE STUDY OF LESS DEVELOPED COUNTRIES ON
THE SILVER AND GOLD STANDARDS IN THE LATE NINETEENTH CENTURY

by

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I INTRODUCTION

As balance of payments difficulties have continued to plague most LDC's (with the exception of some of the major petroleum-producing countries), most LDC's have been forced to adopt, at least implicitly, a strategy for attaining rapid growth within the confines of a severe balance of payments constraint. Most LDC's have opted for one of two such strategies -- the import substitution strategy (in which tariffs, quantitative restrictions and multiple exchange rates have played a large role) or the IMF-supported package of monetary and fiscal austerity.

Ten years ago many countries might have looked to foreign aid as a means of balancing payments and, at the same time, channelling foreign resources into their economic development. However, the prospect for this rather pleasant alternative is not nearly as bright as it was then, and it is evident that much of the adjustment must take place within and be achieved by the LDC's themselves. Furthermore, as time passes, it becomes increasingly clear that neither of these alternative strategies appears to have been successful in allowing many of the LDC's to sustain what might be regarded as satisfactory growth in terms of per capita income or virtually any other index of development over a period as long as two decades. In addition, there has been increasing recognition of the additional costs in terms of allocative and dynamic efficiency and of administrative capability of the import substitution strategy via exchange

control¹ on the one hand, and in terms of structural rigidity, product concentration and income distribution associated with fiscal and monetary austerity² on the other. These rather disappointing results have, in a number of instances, been achieved even with rather generous amounts of foreign assistance.

Indeed, the few LDC's that have sustained rapid growth in the postwar period -- such as Israel, Greece, Taiwan, Korea, Hong Kong, Spain and possibly Portugal, Zambia, and Peru³ -- would each seem to have departed significantly from the more commonly adopted "import-substitution, or "IMF-classical"-strategies by leaning towards exchange rate-oriented policy packages emphasizing export promotion. Partly as a result of this experience increasing attention has been devoted at both the empirical and theoretical levels to the role of exchange rate policy in the economic development of LDC's.⁴ Nevertheless, it would be dangerous if not foolish, to argue that the difference in growth performance of the several rapidly growing LDC's listed above from that of all the other LDC's could or should be attributed entirely to a difference in the strategy of meeting their persisting balance of

¹Among others in a rapidly growing critique of import substitution are Gustav Ranis [85], David Felix [36] and Scitovsky [93].

²E.g., see Lauchlin Currie [27]

³According to AID [102] and OECD [79] statistics, these are the only LDC's (other than the larger petroleum producers) that would seem to have doubled their per capita incomes since 1950.

⁴Among the empirical studies which have attempted to relate exchange rate policy to export performance are those of Sheahan and Clark [94], Urdinola and Mallon [107] and Johnson [56] for Colombia, Clark [20] for Brazil, Islam [54] for Pakistan, Baba and Tatemoto [5] for Japan, Nugent and DePrano [78] for Ecuador, and on an international cross-section basis that of DeVries [29]. Cooper [26] has attempted to assess the short run impact on the balance of payments of 24 devaluations in 19 different LDC's. In contrast to the rather voluminous theoretical literature relating exchange rates with balance

payments problems. Indeed, each of these countries would seem to have enjoyed very special advantages in terms of external assistance, geographical location and a considerable amount of good luck.

Any attempt to separate the effects of these various factors is likely to be beset by a number of difficult methodological problems stemming from the fact that almost nothing is constant or completely exogenous in the long run. For one thing, exchange rates -- even pegged ones -- are not entirely exogenous in the long run. Since countries with excellent export growth will be less likely to devalue than countries with slower export growth, any attempt to estimate the impact of exchange rates policy (as measured by the price of foreign exchange in terms of domestic currency) on exports -- a relationship that should be positive -- would be subject to a negative bias of possibly sizeable magnitude due to the presence of a simultaneous and negative relationship between export growth and exchange rates. Another problem is that devaluations are often accompanied by various kinds of reforms, such as import liberalization (a relaxation of import duties and/or quantitative restrictions on imports) or exchange rate unification (a movement away from multiple exchange rates), or by simultaneous attempts to complement or compensate for the effects of devaluation by monetary and fiscal constraint, increased export taxes, etc. Still another complexity that has not been sufficiently appreciated is the fact that, although exchange rate policy may operate both on the supply of exports and on the demand for exports, the precise way in which it operates on each of these factors may differ. Thus, while it may be the exchange rate relative to the

(Footnote ⁴ continued from previous page)

of payments adjustments, a rather unique theoretical study relating exchange rate policy with economic growth is that of Baldwin [7].

ratio of export prices of the country is to those of the rest of the world that is relevant in the demand for exports, it may be the exchange rate and export prices of the country are relative to other prices of country is that are relevant to the supply of exports. It is no wonder, then that previous attempts to demonstrate the impact of exchange rate policy on export performance primarily in the postwar period (in which the feedback has been quite evident) have not been entirely successful.

The purpose of this paper is to explore the relationship between exchange rate policy on the one hand, and export performance and economic growth, on the other hand, during the latter part of the nineteenth century. This period offers particular advantages in overcoming at least some of the methodological problems which beset similar investigations in subsequent periods. This was a period in which the vast majority of the countries of the world were explicitly or implicitly committed to either the silver standard or the gold standard. Since the price of silver in terms of gold fell rather steadily between 1873 and 1894 (as shown in Table 1) due both to relative changes in supply conditions in the producing countries and to relative changes in demand conditions (especially as more and more countries switched away from the silver to gold and paper currencies) this meant a more or less gradual implicit devaluation by the countries of approximately 50% over these two decades.

What is important to realize is that this kind of de facto devaluation on the part of each of the silver standard countries with respect to each of the gold standard countries was largely unintentional and was totally independent of the balance of payments positions, of any individual country and therefore was not prompted by poor export performance of any particular country. This means that any estimate

TABLE I

THE RELATIVE PRICES OF SILVER AND GOLD 1868-1897

Date	London Price of Bar Silver in terms gold (pence per ounce) (1)	U.S. Annual Average Price of gold in terms of silver (ounce per ounce) (2)	Price of U.S. Dollar in Mexican pesos on New York Market (3)
1868	60.50	15.59	-
1869	60.44	15.60	-
1870	60.56	15.57	-
1871	60.50	15.57	-
1872	60.31	15.63	-
1873	59.19	15.92	-
1874	58.31	16.17	-
1875	56.69	16.59	-
1876	53.13	17.88	-
1877	54.81	17.22	1.099
1878	52.63	17.94	1.099
1879	51.25	18.40	1.111
1880	52.25	18.05	1.124
1881	51.63	18.16	1.119
1882	51.81	18.19	1.134
1883	50.56	18.64	1.143
1884	50.69	18.57	1.157
1885	48.56	19.41	1.225
1886	45.38	20.78	1.266
1887	44.69	21.13	1.318
1888	42.88	21.99	1.353
1889	42.69	22.10	1.319
1890	47.75	19.76	1.195
1891	45.06	20.92	1.346
1892	39.75	23.72	1.522
1893	35.56	26.47	1.855
1894	28.94	32.56	1.946
1895	29.81	31.61	1.866
1896	30.81	30.65	1.976
1897	27.56	34.34	2.232

Notes:

- (1) Source: Study of Silver Values and Commodity Prices, Ministry of Industries [23, Table 1, pp. 2-4.]
- (2) Source: Patrick [80, Table 2, p. 197]
- (3) Source: Mexico [73, p. 153]

of the effect of devaluation on export growth during the 1873-1895 period will be free of the previously-mentioned negative bias which arises when there is a negative feedback effect from export performance to exchange rate in the long run. Since, even among less developed countries there were a relatively large number of countries on each type of metal standard (and still others with inconvertible paper currencies), we can obtain a fairly large number of observations of the effect of an identical devaluation under the same set of conditions. A third advantage is that by and large this was a period of peace in the world and one in which tariff and quantitative restrictions, multiple exchange rates and other complicating factors played a very minor role in international trade.

An outline of one of the possible ways in which exchange between rate policy may promote development is presented in Section II. Since the effects of exchange depreciation during the same period of time has been the subject of a number of previous studies, in Section III we give a brief critical account of some of these studies. In Sections IV and V, we contrast the export performance and growth performance, respectively of countries (primarily LDC's) on the silver and gold standards. Some conclusions and qualifications are stated in Section VI.

II THEORY

Without doubt the most important and direct effect that exchange rate devaluation should have is on exports. It would seem likely that it should be primarily through its affect on exports that exchange rate policy would effect capital formation, efficiency, output and employment.

The hypothesized effect on exports may be illustrated by Figure 1. Domestic demand is given by D_d , foreign demand by d_f , total demand by $ABDt_0$ and domestic supply by S_1 -- all stated in terms of the domestic

currency (pesos). If perfect competition is assumed in all markets, S_1 will intersect the total demand curve in the segment AB that is made up entirely of domestic demand. Equilibrium is therefore at the price P_0 and domestic demand is d_0 and there are no exports. A devaluation of $\frac{CE}{OE}$ will shift the foreign demand curve to D_f and hence total demand to D_t . Equilibrium is now at P_1 and t_1 , domestic consumption now at d_1 , and $(t_1 - d_1)$ is exported. Continued devaluation would shift D_f further outward and exports would continue to grow and domestic consumption of exportables would eventually disappear. However, (a la Smith and others) the increase in the size of the market would be likely to induce complementary investments, resource shifts, external economies and technological changes sufficient to shift the domestic supply curve outward over time to S_2 which would yield a new equilibrium at P_2 and t_2 in which both domestic consumption and exports would increase to d_2 and $(t_2 - d_2)$, respectively. This increase in the size of the market would be likely to shift D_d and S out further, etc...

The alternative strategy which we have previously labeled "IMF-classical", would be to shift D_d downward to D_d via contractionary monetary and fiscal policies. This strategy would create some exports (e_3) but domestic demand would be eliminated and hence with a smaller total market, it would be unlikely that the supply curve would be shifted outward over time as in the previous case. (In fact the supply curve might very well shift inward over time so that the incentive to exports via the "IMF-classical" strategy would turn out to be short-lived).

While it is possible to conceive of supply and demand conditions in which devaluation would not have such a pronounced effect on exports, Figure 1 should be sufficient to point out that in the long-run the context of economic growth, the static effects of exchange rate

PRICE

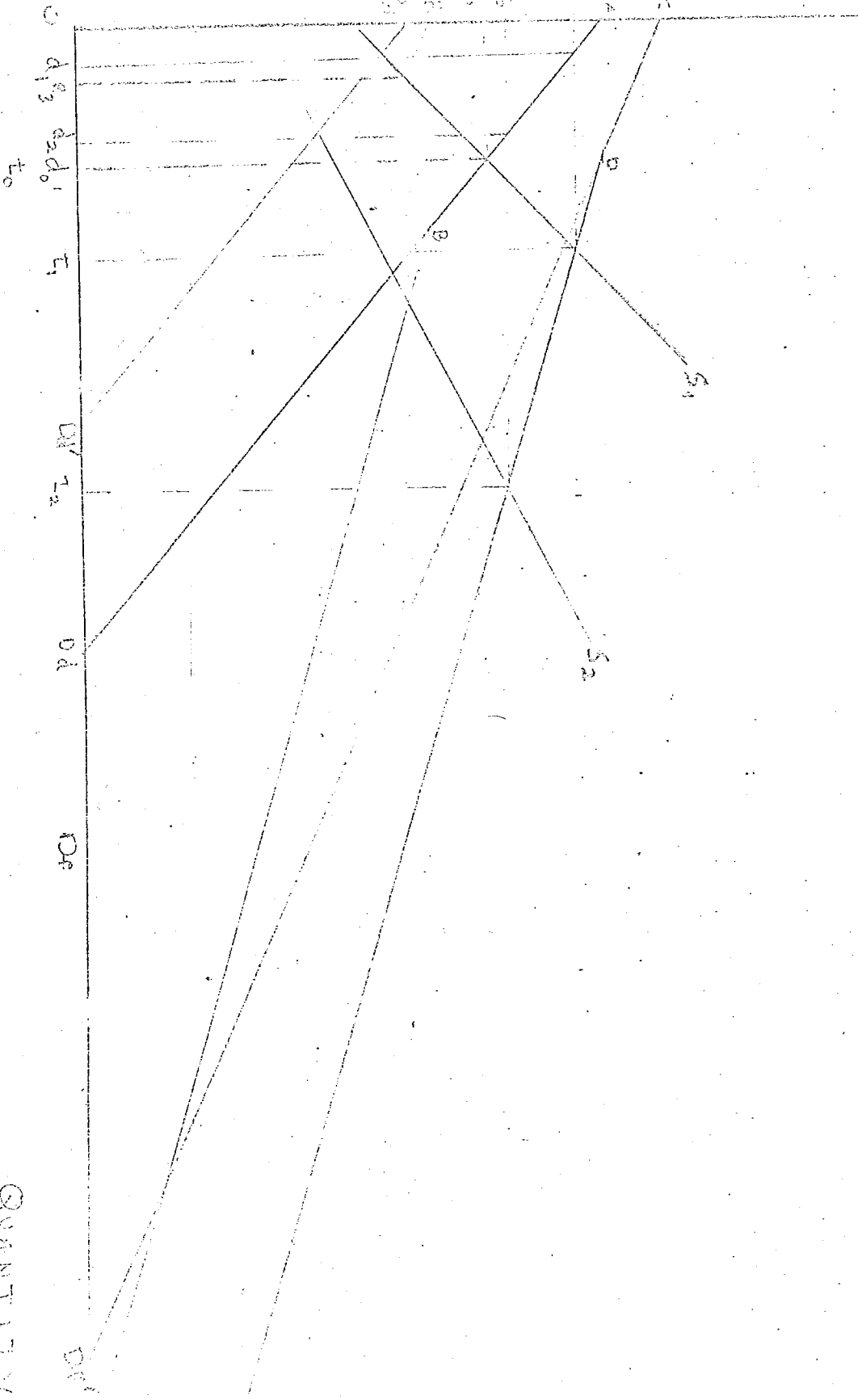


FIGURE 1

EFFECT OF SHIFT OF DEMAND AND SUPPLY CURVES ON EQUILIBRIUM PRICE AND QUANTITY

policy which may be analyzed in terms of elasticity and/or absorption conditions, are likely to be swamped by the less tractable dynamic effects.

As the devaluating country (or countries) moves its resources in such a way as to increase the allocation of resources to the areas of its comparative advantage (which undoubtedly would be changing over time), aggregate allocative efficiency would increase. The rise in the rate of growth of exports would be likely to permit some relaxation of quantitative restrictions on imports and thereby increase the number of areas in which domestic producers would face competition from the outside world. Furthermore, a more rapid rate of growth is likely to induce a greater number of competitors into the market. As competition increases, allocative efficiency would be improved. The increase in allocative efficiency both from movement toward comparative advantage and increased competition would raise income and hence savings and investment probably faster than the rate of growth income. Foreign capital (and possibly other foreign resources) would likely be induced by the expansion of the economy and increased investment opportunities especially in the export sectors in which foreign capitalists and entrepreneurs are likely to feel most comfortable. The increased capital stock (and perhaps other factor accumulations) would increase potential output. The new capital goods (perhaps embodying technological change) and the expanding size of the markets would induce technological change (or dynamic efficiency) associated with and derived from internal and external economies at the micro level.

Increased output from these sources, and from the effect of devaluation on the price of investment goods (largely imported) relative to wages (which would depend largely on the price of home goods) would

increase the demand for labor and hence employment would be expected to grow without necessarily depending on money illusion on the part of the workers.

Connections between continuous devaluation and growth other than those briefly sketched here are also possible. For example, devaluation can effect income distribution and thereby influence savings and import propensities⁵. Devaluations can also influence prices and hence the real value of assets and desired assets, the relative rates of return on financial and real assets and hence savings and investment rates⁶. Also via the effect on exports and hence money supply and interest rates (in a mercantilist world) exchange rate policy could affect investment and growth. Terms of trade effects on growth rate policy, and repercussions thereof, would also have various kinds of effects on growth in the long run⁷. Since a variety of possible mechanisms would seem likely to exist, a large and rather sophisticated model would seem to be required to integrate and test the relative significance of the various possible ways in which exchange rate policy may affect growth. It would therefore seem wise to seek empirical support for an overall effect of currency devaluation on economic growth before going about the model building. This would seem particularly warranted in view of the previous empirical findings (to be discussed in the next section) which have not always supported the existence of such a relationship.

⁵See Carlos F. Diaz Alejandro [30]

⁶See Murray Kemp [58]

⁷See S. C. Tsiang [98]

III A CRITICAL SURVEY OF PREVIOUS STUDIES OF THE EFFECTS OF THE FALL IN SILVER PRICES ON DEVELOPMENT OF SILVER STANDARD COUNTRIES

Of the studies and commissions established to investigate the effect of the depreciation of silver on economic conditions in both silver and gold standard countries some have produced results emphasizing the benefits of currency devaluation and some have concluded that on balance the effects were largely negative. Although probably a majority of the studies undertaken in the silver countries revealed net benefits of the steady depreciation of silver in terms of gold, almost all those undertaken in gold standard countries revealed some of the obvious disadvantages of currency appreciation⁸, the studies which have attracted the most attention have been those which concluded that implicit exchange devaluation had not been unfavorable to the orderly economic development of certain of the silver countries. Particularly influential among these studies were those of the subcommittee of the Singapore Chamber of Commerce of 1897 and the Straits Settlements Currency Committee of 1902 referring to the experience of the Straits Settlements and Malaya

⁸For example, there were the views of the Mexican delegation to the Brussels conference of 1892: "The depreciation of silver as it appeared to foreign countries --- has produced an actual premium on exportation. Articles which were not exported formerly are sold now in the markets of Europe and the United States" (Quoted in Russell [91, p.398]. Among other favorable reports in silver countries were those of the Minister of Finance in Chile, reported in Fetter [38], Kemmener's study of Mexico [57 , p. 479-483], the Silver Currency Commission (Swettenham Commission) in Ceylon of 1893 reported in Gunasekera [48], the French Ministerial Commission on Indochina in 1902 reported in Thin [97] and of the Japanese Commission reported in Leavins [62, p. 110]. Among those indicating unfavorable effects of currency appreciation in gold standard was that of the Berlin Silver Commission 1893-4 and similar conclusions were no doubt the inspiration of the International Conferences of 1878 and 1881 reported in Leavins [62]. While the Ministry of Industries study in China came out against silver in 1935 [23], it is significant to note that this conclusion was prompted not by the depreciation of silver 1920-1931 but the subsequent sharp appreciation of silver 1932-35.

(reported in Kemmerer [57]), the reports of the Herschell Committee of 1893 [57] and of the Fowler Committee of 1898 [39] and also Remer's study of China [87]. The findings of these studies were indeed quite negative.

In the Herschell Committee Report we find the following conclusion:

"Upon the whole we cannot see any evidence that the effect of a falling exchange on the country at large, in influencing either exports or imports, has over a series of years been very considerable."
[51]

And from the subsequent Fowler Committee the following equally strong conclusion emerged:

"We desire to state that we have been unable to find any statistical support for the theory that exports are largely and permanently stimulated by a depreciation of the standard of value, resulting in a fall in the exchange." [39]

These conclusions are indeed sufficiently strong to demand some explanation if the rough model sketched above is to be given any credence. Each one of these committees, commissions or studies presented findings particular to the single country concerned and hence to a certain extent the empirical evidence presented would have to be examined in detail on a country by country basis -- a task of excessive magnitude for a study of this scope. Fortunately, in reading through them one can easily see that the kinds of arguments presented in support of their conclusions were largely the same for each of these studies and hence the validity of their conclusions can be evaluated in terms of the logic of their arguments which can be summarized and criticized as follows:

(1) First, it was contended in several of those countries that

imports grew faster than exports⁹. While in the static sense alone this should indeed be the antithesis of the expected effect of currency depreciation on the balance of payments, which would presumably be to assist exports and promote import substitution, in the dynamic context (which would seem to be relevant to a period as long as two decades) the capital goods and perhaps, raw material and intermediate inputs for the growing and shifting productive capacity would have to be imported. Hence the alleged finding would be entirely possible and, in fact, indicative of a successful beginning for a take off into rapid economic development. The external deficit (Imports - Exports) is, of course, net foreign investment. Starting from either an external equilibrium or a deficit, the fact that imports are growing faster than exports means that some imports, probably capital goods imports, are being obtained in return for IOU's or claims on domestic assets of various kinds. When foreign capital is induced into the depreciating country over a period of years on an increasing scale, it would certainly not seem justifiable to record this as evidence of harm brought about by the depreciation of the currency. Indeed it would seem more appropriate to interpret this as evidence of a healthy state of expanding investment opportunities and of capital accumulation and growth!

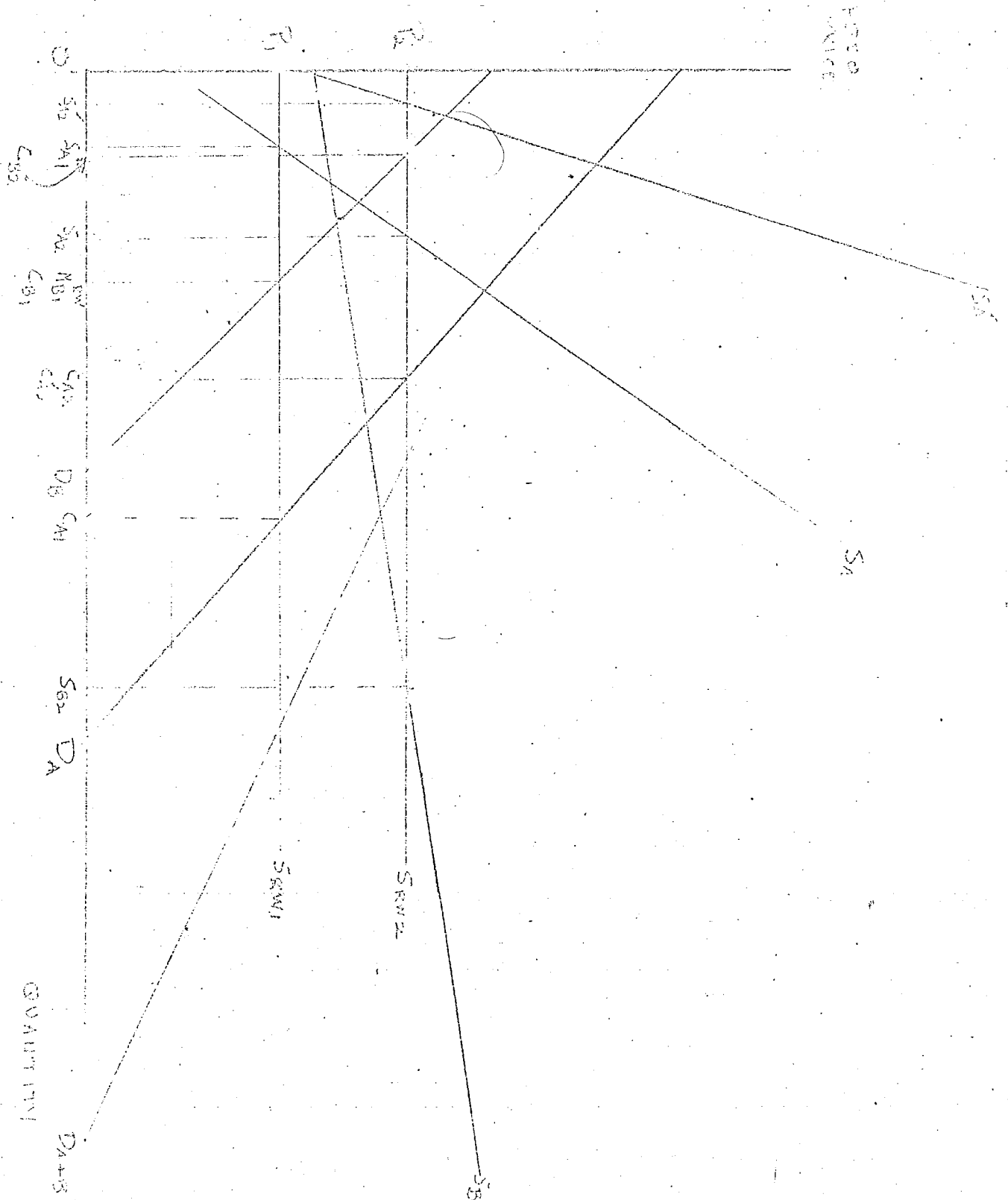
⁹This argument was stated most strongly and relied on most heavily by Remer [89] but in other studies as well (Ray [86]). Actually evidence presented elsewhere by Remer, himself, [87,88] suggests that such a finding at least in the case of China may indeed have been a statistical aberration brought about by (1) an increasing tendency to underinvoice exports which were subject to export taxes of increasing severity due to their emphasis on specific taxes in periods of falling export prices (2) the omission of all trade in Chinese transport ships (mainly junks) carrying on a reportedly brisk and growing trade with neighboring countries and (3) the lag in the exchange rate used to convert gold currency to Chinese silver currency by the customs houses behind current rates of exchange.

(2) It was pointed out that exports of the silver countries to other countries had in some instances grown as fast or almost as fast as had their exports to gold standard countries. Since all silver countries were during the depreciation of silver implicitly devaluating at identical rates with respect to gold standard countries but, therefore, not with respect to each other, such an outcome was said to imply that the observed increase in exports should be attributed to factors other than the depreciation of silver¹⁰. However, by reference to Figure 2, the reader will be able to see that increased exports to other silver countries would indeed be a likely consequence of devaluation. In this diagram D_A and D_B represent the domestic demand curves for certain exportables in silver countries A and B, respectively, and S_A and S_B represent their supply curves. At the initial exchange rate the foreign (gold standard countries) supply and/or demand curve in terms of domestic currency (silver pesos) is given by S_{RW1} and A's consumption is given by C_{A1} and B's by C_{B1} . A produces S_{A1} and imports $(C_{A1} - S_{A1})$ from the gold countries (S_{RW1}). B is entirely an importer. However, when the two silver countries devalue by $\frac{P_1 P_2}{OP_1}$ with respect to gold countries, the foreign supply (demand) curve shifts upward to S_{RW2} , A's consumption falls to C_{A2} and B's to C_{B2} . A's production increases to S_{A2} while B's increases from zero to S_{B2} , and B will become a likely supplier of A's imports $(C_{A2} - S_{A2})$ as well as an exporter to the gold countries (the rest of the world) of $[(S_{B2} - C_{B2})' - (C_{A2} - S_{A2})]$.

It would be easy to construct a case in which the increase in trade between A and B would exceed the increase in trade of A and B with the rest of the world. This case would be especially likely to arise if S_A would shift inward over time as external diseconomies set in or

¹⁰ See Ray [86] and the Herschell Committee [51].

12a



technological change lags behind that in other sectors (as its effective market for A's suppliers dwindles) and/or if S_B would shift outward over time as each country tends to move in the direction of its comparative advantage. The inducement to trade among the various devaluating countries would be further enhanced if D_A and D_B shift outward over time as a result of rising incomes in the devaluating countries.

Since many of the silver countries enjoyed geographical proximity to each other (grouped as they were almost exclusively in Asia and in Latin America) and since ample evidence will be presented that the silver countries were growing more rapidly (and hence their demand curves were shifting out over time more rapidly) than were the gold countries, it would not be surprising to find trade among silver countries growing at least as rapidly as between silver and gold standard countries. Therefore, rather than being interpreted as an indication the weakness of the devaluation effect, a rate of growth in exports of silver countries to other silver countries equal to that of the exports of silver countries to gold countries should more appropriately be interpreted as evidence of the strength and healthiness of this effect -- a customs union -- creating effect with the bonus of also stimulating extra regional exports.

(3) Almost all of these studies pointed out individual years of extremely depreciated rates and poor export performance and/or vice versa. However, when very short periods of time are involved, the effects of exchange rate changes could be (and often were) swamped by the effects of weather, war, disease and internal insurrection and hence this kind of evidence is hardly very convincing. Even when the growth rates of different short periods of time are compared, as in Lin [67], the

the time lags involved between investment, and output, and export would seem to make the usefulness of this kind of evidence most dubious.

(4) A charge frequently made against devaluation in the present context was that exchange rate fluctuations were both a necessary consequence of devaluation and a serious evil. While fluctuations in exchange rates may have been a characteristic associated with the general depreciation of silver during the period under investigation, there is no reason to think that exchange rate fluctuation is a necessary consequence of exchange rate devaluation. Furthermore, despite some methodological shortcomings, MacBean [68] has presented some results which suggest that the case against fluctuations or instability of various kinds may not be as strong as it was once thought to be.

(5) In some of the countries it was alleged that export prices were falling more rapidly than import prices and that this implied both a terms of trade loss attributable to devaluation and made it unlikely that an increase in export supply could be induced without resorting to coercion. However, Machlup [69], Tsiang [98] and others suggest that the terms of trade effect is neither the only nor the most important consequence of devaluation and that a terms of trade a deterioration may not be independent of other (beneficial) effects of devaluation. Furthermore, while the implication may hold for a naive two-commodity world, it would certainly not hold for a more realistic three-commodity world, in which, in addition to imports and exports, there is a home goods sector. It is precisely home goods prices that would be expected to fall more rapidly than either export or import prices as a result of devaluation. It is therefore quite possible, and in fact highly likely, that the rise in export prices relative to home goods would be sufficient to induce greater export supply even if the price of

were falling more rapidly than import prices.

(6) It has been asserted that several of these silver standard countries were able to expand their exports at almost the same rate even after they had switched from to silver to gold. Such was evidently the case for India from the time of the switch to gold in the mid 1890's to World War I. Ray [86] and Keynes [89] have used such an argument to belittle the importance of the depreciation on silver in the 1874-1894 period. What these authors fail to realize is that, unlike the earlier period, the 1895 - World War I period was one of stable silver prices and rising export prices^{11a} and hence would have been expected to have had much the same effect on the supply of exports as devaluation in the previous period.

When one compares the findings of, the composition of and the kinds of witnesses called by several of these commissions (favorable and unfavorable to the effect of devaluation on economic growth), it becomes easy to suspect the objectivity of some of their findings. Leavens [62] has pointed out the heavy influence exerted by importers and underrepresentation of exporters in the Indian commissions which is in sharp contrast to the experience in Ceylon (Gunasekera [48]). Ingram [53] reported the excessive influence and nationalistic prejudices of foreign advisors in the case of Thailand. Gunasekera [48] pointed out that the British personnel of the commissions and their staffs were biased against depreciating exchange by their own personal desires to make sterling remittances from their fixed rupee salaries to their families and banks in Great Britain. It might be more than a coincidence that all of the "native" minority in the Singapore

^{11a} The price of bar silver in London was 28.94 pence per ounce in 1894 and 28.03 in 1912, according to the Committee for the Study of Silver Values and Commodity Prices [23, pp. 3-4]. Lewis' price index of Primary exports rose from 73 in 1894-6 to 100 in 1913 [64, pp.117-8].

Chamber of Commerce favored retention of silver (Kemmerer [57 , p. 394]) and that "native" participation was reduced in the subsequent Straits Settlements Monetary Commission¹¹. Also it would appear that Indians were not only totally excluded from the deliberations of the Herschell and Fowler committees but also were not even permitted to present their views to the members of these committees -- committees which produced conclusions negative to exchange depreciation¹².

On the basis of these various kinds of shortcomings and logical non-sequiturs in the studies which purported to deny the existence of a favorable relationship between exchange devaluation and economic growth, a new look at the evidence--focusing more on comparative long term trends and growth performance -- would seem justified.

IV A COMPARISON OF EXPORT PERFORMANCE IN GOLD, SILVER AND PAPER CURRENCY COUNTRIES¹³

In this and the following section we shall attempt to estimate the effect of exchange rate devaluation on economic development by comparing the export performance (and subsequently other growth indicators) of silver standard countries (and to a certain extent other devaluating countries which were on an inconvertible paper currency) with that of gold standard countries. Such comparisons would, of course, yield reliable estimates of the impact of continuous devaluation on economic development only if "other factors" did not differ between countries.

As usual history does not readily provide us with such a nice opportunity for a controlled experiment. The geography, resource,

¹¹The source of this statement in Kemmerer [57 , p. 394-7]

¹²Ibid, p. 13

¹³Throughout this paper gold-exchange standard countries and silver-exchange countries will be treated as identical to gold standard and silver standard countries.

endowments, the social and economic institutions and the level and momentum of development inherited from the past, of course, from country to country. However, the rather large sample of countries of each type permits comparisons (at least on a limited basis) of sub-samples of silver and gold standard countries in which other factors are fairly similar. Since, as mentioned in the previous section, it was quite common for those opposed to exchange depreciation to attribute export growth and overall economic development to "other factors", it is important that we take note at the outset of some of the more pervasive of these other influences.

First, and perhaps foremost among these other influences was the opening up of the Suez Canal in 1869. The time and cost saving in shipping between the Orient and Europe was considerable. In as much as most of the Asian countries were on the silver standard¹⁴ at the time of the Suez Canal opening, the silver standard countries were probably more favorably influenced by the Suez Canal than were the gold countries. However, French possessions in India and the Dutch East Indies were also on gold and thus provide a more fair basis of comparison with the several silver countries of Asia. In other parts of the world, notably in Latin America, there were a number of countries on both silver and gold¹⁵. Furthermore, since the Suez Canal was opened

¹⁴India, Ceylon, Japan, Korea, Indochina, the Philippines, Thailand, the Malayan states, Straits Settlements and China were all on silver throughout this period.

¹⁵Bolivia, the Central American countries (Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua), Ecuador, Mexico and Peru were on silver while Argentina, and Chile were on depreciating paper and Cuba, Puerto Rico, Venezuela, Uruguay, the British, Dutch and French West Indies and Guianas were on gold.

as early as 1869 -- an event which could easily be anticipated well in advance -- whereas the depreciation of silver did not start on a significant scale until 1874 (the beginning date for our investigation), much of the Suez Canal effect was probably realized prior to the period under investigation.

A second and closely related factor was the development of steamboats which, like the Suez Canal opening, resulted in lower shipping rates. The effect of the steamboat innovation was undoubtedly felt only more gradually and therefore was less likely to have been fully realized prior to the beginning of the period under investigation (1874-1894). On the other hand, it is much less likely that the fall in shipping costs would have favored any one group of countries more than another. If anything, one might suspect that the countries most distant from their main markets, most notably the gold standard countries of Oceania and South Africa, would have benefitted most significantly from this development.

A third factor of considerable importance was the importance of the "opening up" and "peace-making" powers which the colonial powers exercised on an increasing scale in many of the colonial areas during the period and the not inconsiderable investments made in transport facilities and other forms of social overhead capital. This factor undoubtedly did much to promote trade in the areas affected. However, once again, there is no reason to think that the silver standard colonies gained to any greater extent than the gold standard countries on this account. There were also many examples of silver and gold countries which had already obtained their independence and thus where this and other effects (both desirable and undesirable) of colonial status were absent.

Another factor which might have biased the results considerably if it differed significantly between countries is trade policy. There is

some indication that both export and import tax rates fell over the period in many countries--at least until the 1890's--but there is no reason to believe that the changes are more noticeable in the devaluating countries than in the gold countries. Actually trade liberalization was probably weakest in the depreciating paper countries. However, as noted in the introduction, the period under investigation was characterized by relatively free trade and quantitative restrictions on trade (with the exception of restricting on specie movements in a few countries) were almost nonexistent.¹⁶

Still another major "outside" influence was the trend in commodity prices. Although one cannot be very precise for want of reliable and relevant statistics, there is evidence of great diversity in price trends even though almost all prices were falling over the period. Some prices (such as those of copper, rice, various cereals, sugar, and cotton) fell much more rapidly than the price of silver, whereas the prices of some commodities (e.g., tobacco, animals, meat, dairy products, machinery, coal, wine, lumber and of course gold) declined to a considerably smaller degree than the price of silver. Although the two decade period under investigation should be sufficiently long to permit countries to depart significantly from their traditional export bundles, the high degree of product concentration in the exports of a large number of countries--both silver and gold--and the long gestation period between plantings and output in a number of these products make it likely that the varying world market conditions for the country's base period export bundle could have accounted for considerably different patterns of export performance over the period. Naturally, countries, where export prices were falling more rapidly than the average, would be affected

¹⁶ See J.B. Condliffe [24].].

¹⁷ The price indexes referred to are the wholesale price indices for the

adversely in comparison with countries whose export prices were falling less rapidly. Unfortunately, the lack of detailed volume and price statistics for exports during the period for all but a few countries makes it impossible to test the importance of relative differences in world market conditions of different commodity bundles in explaining differences in export performance in any systematic or comprehensive way. There would seem to be every indication that on the whole the export prices of gold standard countries did not fall as rapidly as those of silver standard countries.¹⁸ Therefore, the omission of such differences in the overall comparison of the export performance of silver and gold countries, which is to follow, will bias the results against the hypothesis that continuous devaluation is conducive to export growth and economic development.

Finally, it should be admitted that, despite general peace in the world between the mid-1870's and the mid-1890's, there were some small wars, internal rebellions revolutions, droughts, floods, disease epidemics and various other exogenous factors which may have affected individual countries considerably but not silver, gold or paper countries as a whole. Therefore in what follows, we shall present the evidence we have been able to accumulate to date in such a way as to compare the overall experience of the depreciating silver standard and paper standard countries with that of gold

17 (continued)

U.S. available in U.S. Bureau of the Census [104]] and scattered series of export and import price indices of various national sources utilized below.

¹⁸ This may or may not be an indication of a terms of trade loss for the silver countries attributable to devaluation. Imlah's careful study [52] of the British terms of trade during this period found no positive influence of currency appreciation for Great Britain.

standard countries leaving it to the reader to make his own comparisons of individual countries which he feels may be most comparable. If anything, this simplification probably biases the results against our hypothesis. Thereby we relegate the consideration of various of these "other factors" to the explanation of some of the larger deviations from group norms (i.e., the mean growth rates for gold and silver countries) rather than for explaining the more fundamental intergroup differences.

4. Export Performance of the Gold Standard Countries

In Tables 2 and 3 we present aggregate merchandise exports, as measured in gold currencies, for each of the colonies of Great Britain and France, respectively, that were effectively on the gold standard. (Several of the other British colonies--Hong Kong, Straits Settlements, the Malayan states, Ceylon and India--were on silver standards. Of the French colonies only Indochina remained on silver until the end of the 19th century.) In Table 4 appear the corresponding export statistics in the appropriate gold currency of other gold standard countries including some of the more highly developed economies and the colonies of Holland and Spain. Unfortunately, the statistics of the French colonies are not comparable with those of Tables 2 and 4 in as much as they cover a somewhat shorter period. On an aggregate basis we have interpolated the figures back to 1876 on the basis of the colonies exports to France, alone, between 1876 and 1880. If the statistics were available on a comparable basis back to the early 1870's, it is conceivable that a slight growth in the gold value of exports would have been revealed instead of the significant decline in their exports which is shown in Table 3. But it would seem quite unlikely that the

Table 2
Merchandise Exports of the British Colonies
on the Gold Standard¹ in Millions of British £

<u>Colony</u>	<u>1871-1875 Average</u>	<u>1894-1896 Average</u>
Mauritius	2.584	1.579
Labuan	.095	.055
Falkland Islands	.039	.129
Natal	.590	.758
Cape of Good Hope	4.013	7.800
St. Helena	.029	.001
Lagos (Nigeria) ⁷	.487	.776
Gold Coast	.317	.698
Sierra Leone	.020	.018
Gambia	.138	.081 ²
Canada	17.211 ⁸	24.659 ²
Newfoundland	1.303	1.191
Bermuda	.064	.098
British Honduras	.222	.176
Bahamas	.919	.123 ³
Turk's Island	.023	.027 ³
Jamaica	1.288	1.669
St. Lucia	.160	.109
St. Vincent	.217	.071
Barbados	.928	.581
Grenada	.153	.181
Tobago	.070	.010
British Virgin Islands		.010
St. Christopher	.161	
Nevis	.500	.334 ⁴
Antigua	.171	
Montserrat	.034	
Dominica	.068	
Trinidad	1.152	1.379
British Guiana	2.538	1.321 ⁵
Malta ⁹	8.205	5.000 ⁶
Australia	17.880	30.500 ⁶
New Zealand	3.380	(5.315) ⁷ 7.844 (8.888) ⁷
Total	64.525	87.168

Index 1894-6 (1871-5=100) = 135.1

¹ Does not include Fiji Islands, Gibraltar, British Borneo, Zanzibar, British East Africa, Cyprus, British New Guinea, for which data was not available and/or were not under British control in one of the periods.

² Includes Northwest territories which was not part of Dominion of Canada in 1871-5 period.

³ Includes Caico Islands which were not included in earlier figures.

⁵ Estimated from British import data.

Table 2 (continued)

⁶Includes Northern territories not included in the earlier period.

⁷Includes bullion and specie exports.

⁸1872-76 average.

⁹May include some reexports.

Sources: (1) For all colonies except Australia: United Kingdom, Board of Trade [101].

(2) For Australia: N.G. Butlin [14, Table 247, p. 410].

Table 3

Merchandise Exports of the French Colonies on the Gold

Standard 1876-80 to 1893-95

(in millions of French francs)

Colony	1880				Total
	1876-1880 Average	To Other French Colonies	To Other Coun- tries		
	to France	to France			
Martinique	22.4	24.5	.6	8.8	33.9
Guadaloupe	19.8	20.7	.2	10.0	30.9
French Guinea	.4	.5	-	.1	.6
Reunion	22.6	18.1	.4	5.1	23.5
Senegal	12.9	19.8	3.6	1.9	25.3
French India	6.1	11.1	1.2	13.2	25.4
St. Pierre et Miquelon	8.5	7.6	1.8	2.3	11.7
Madagascar	3.3	3.5	-	3.0 ¹	6.5 ¹
Tahiti	.8 ¹	.8	-	2.5	3.3
New Caledonia	-	-	-	2.4	2.4
Gabon	n.a.	n.a.	n.a.	n.a.	1.4 ⁴
Other French West Africa	?	?	?	?	5.2
Total (excluding French West Africa and Indochina)	96.8	106.6	7.8	49.3	164.9 ³
1893-5 Index (1876=100):	95.6 ⁵				

¹Estimated

²1892 only.

³Column and row totals are not identical because of rounding error and because a breakdown of exports by destination is not available for Gabon.

⁴1881 data

⁵1880 total has been interpolated back to 1876 on the basis of the French import statistics 1876-80.

Source: France, Ministere and Colonies [41].

Table 3 (continued)

Colony	1893-5			Total
	To France	To Other French Colonies	To Other Countries	
Martinique	20.1	.5	1.3	21.9
Guadeloupe	15.4	.5	.2	16.1
French Guinea	9.2	-	.2	9.4
Reunion	15.8	.2	.9	16.9
Senegal	12.5	.1	3.7	16.3
French India	10.8	.3	7.9	19.0
St. Pierre et Miquelon	6.3	1.4	2.5	10.2
Madagascar	2.0	.2	2.4	4.6
Tahiti	.2	.2	2.7	3.1
New Caledonia	2.5	-	4.9	7.4
Gabon	n.a.	n.a.	n.a.	3.1
Other French West Africa	<u>5.2</u>	<u>-</u>	<u>13.0</u>	<u>18.2</u>
Total (excluding French West Africa and Indochina)	94.8 ⁵	3.4	26.7	128.0
1893-5 Index (1876=100)	95.6 ⁵			

Notes:

¹Estimated.

²1892 only.

³Column and row totals are not identical because of rounding error and because a breakdown of exports by destination is not available for Gabon.

⁴1881 data.

⁵1880 total has been interpolated back to 1876 on the basis of the French import statistics 1876-80.

Source: France, Ministere and Colonies [41].

Table 4

Exports of Other Gold Standard Countries and Colonies

Country	Units	1872-5 Average	1892-5 Average	1892-5 Index 1872-5=100)
Algeria	million francs	148.5 ¹	254.0 ²	171.0
Belgium	million francs	2.1	2.7 ⁴	128.6
Bulgaria	million crowns	50.4 ¹²	78.0	154.8
Cuba	million gold pesos	88.0 ³	113.0	128.4
Denmark	million kroner	154.0	211.0	137.0
Dutch East Indies ¹³	million florins	172.0 ⁵	223.0 ¹¹	129.7
Egypt	million Egyptian pounds	13.6	13.0	95.6
Finland	million marks	85.0	135.0	158.8
France	billion francs	3.78	4.40	116.4
Germany	million marks	2.4	3.1 ¹⁰	129.2
Haiti	million gourdes	10.0	12.2 ⁴	122.0
Italy	million lira	1006.0 ³	972.6 ⁴	96.7
Netherlands	million florins	516.0	1177.0	228.1
Norway	million kroner	110.0	123.0	111.8
Portugal	million francs	130.4 ⁵	136.7 ⁶	104.8
Sweden	million kroner	215.0	313.0	145.6
United Kingdom	million pounds	243.7	221.7	91.0
United States	million dollars	569.0 ⁷	793.0 ⁵	139.4
Uruguay	million gold pesos	15.7 ⁸	26.8 ⁹	170.7
Venezuela ¹⁴	million gold bolivars	76.8	98.7	128.5
All countries combined Index (1872-5=100)				134.4

¹1873-5

²1894-6

³1874-5

⁴1891-5

⁵1875

⁶1892

⁷1874

⁸1872-4

⁹1891-3

¹⁰1893-4

¹¹1895

¹²1881 only

¹³Egypt had a bimetallic standard until 1885

¹⁴Although nominally on a silver standard

Venezuela after 1877 prohibited imports of silver currency. repeatedly coined new gold coins and according to Ramon Veloz Economia y Finanzas de Venezuela Des de 1831 Hasta 1944, Vol. 41.

Caracas, Impresos Unidos, 1945 the bolivar remained at a rate of approximately 25 bolivars to the British pound throughout the period.

Table 4 (continued)

- Sources: Algeria: [2, 1873-5, p. 279 and 1894-6, pp. 209-211].
- Belgium: Belgium, Statistique de la Belgique [8, 1892, p. IX and 1896, p. V].
- Bulgaria: Bulgaria [11, p. XIII].
- Cuba: Friedlaender [43] and Porter [84].
- Denmark: Henriksen and Olgaard [50, p. 40].
- Dutch East Indies: Furnivall [44, p. 129, 169, 171, 207, 337, 338].
- Egypt: Mead [71, Table 6, p. 267].
- Finland: Frederiksen [42, pp. 153-4].
- France: France, Direction Generale de Douanes [40, 1875, p. XXIV and 1896, p. XXXVII].
- Germany: United States, National Monetary Commission [106, p. 153].
- Haiti: Bulletin of the American Republics [12, Vol. 2].
- Italy: Clough [21] and Italy, Ministerio Della Finanze [55, 1879, p. 304].
- Netherlands: Netherlands [76, 1896, pp. 135-6].
- Norway: Norway [77, 1881, p. 57 and 1894, p. 68].
- Portugal: Marvand [70].
- Sweden: Institute for Social Sciences, University of Stockholm [96, Vol. III, p. 584].
- United Kingdom: Imlah [52, p. 97].
- United States: U.S. Bureau of the Census [104].
- Uruguay: Uruguay [108] and Acevedo [1, pp. 38-43 and 85-104].
- Venezuela: Venezuela [110, Vol. 5, No. 10, pp. 34-5].

export value of the French colonies could have grown as rapidly as the other countries.

The average gold standard country--rich or poor, British or French, Dutch or Spanish, Asian, African, etc.--would seem to have achieved a growth in the value of exports of only about 30 percent in more than twenty years--an annual rate of growth of barely 1 percent per annum. It must be remembered that, with world prices falling steadily at about 2 percent per year over the period, in real terms the increase in exports would be somewhat higher. Nevertheless, it should be quite clear that the picture was hardly a very exciting one. The value of exports in no fewer than 28 different gold standard countries or colonies actually declined during this period of more than twenty years! While it is true that exports grew moderately rapidly in some of the larger and more important colonies such as the Cape of Good Hope, Algeria, Australia, New Zealand, the Netherlands and some of the newer colonial territories of Natal, the Gold Coast, Nigeria, Gabon, Guinea, and New Caledonia, in almost all of these cases the growth of exports could be largely attributed to certain very unusual advantages. The "opening-up" effect was probably of utmost importance in the very early stages of colonization in New Zealand, Nigeria, Australia, all of the other African colonies and New Caledonia. Especially favorable export price movements undoubtedly also played a role, e.g., in the case of New Zealand (gold, dairy products, meat) the Netherlands (dairy products), South Africa and Natal (meat, gold, coal) and Uruguay (meat and sheepskins). The technological innovation of refrigeration and refrigerated cargo ships in the 1880's probably contributed greatly to the growth of dairy and meat exports from Australia, New Zealand, Uruguay, South Africa, the Scandinavian countries and the Netherlands. As mentioned

above, the speed and cost improvements in shipping would also have favored the countries most distant from their principal markets in Western Europe-- countries such as Australia, New Zealand, the sub-Saharan African colonies and New Caledonia. Furthermore, the more rapidly growing countries also had rapidly growing populations so that in per capita terms exports were falling in Uruguay,¹⁹ New Zealand,²⁰ Australia,²¹ Canada and probably most of the African colonies.

B. Export Performance of Silver and Paper Countries

Statistics on aggregate exports are unfortunately much scarcer for silver and paper countries and there are a number of such countries for which it has been impossible to find any export data. In Tables 5 and 6 we present what statistics we have been able to find for silver and paper countries, respectively. In order to be as comparable as possible with the data presented for the gold standard countries, all statistics have been presented in terms of a gold currency or in a silver currency deflated by the price index of silver in terms of gold from Table 1. As the notes and sources indicate, the statistics have been obtained from widely scattered sources and, therefore, it would seem only fair to warn the reader that the figures presented in these tables are undoubtedly less reliable than those presented in the previous tables. In addition, the years for which we were

¹⁹ See Hanson [49].

²⁰ See Simkin [94a] and Condliffe [25].

Indeed Condliffe presents a series of per capita exports in constant prices which drop more than 50 percent between 1871 and 1895!

²¹ See N.G. Butlin

Table 5

Exports of Silver Standard Countries and Colonies

Country	Units	1872-5 Average	1893-6 Average	1893-6 Index (1872-5=100)
Bolivia ¹	tons of tin exports	300 ²	1800 ³	not applicable
Ceylon	million British pounds	3.6	4.4	122.2
China	million HK tael deflated by exchange rate index	69.6	76.6 ⁴	110.1
Costa Rica	million dollars (US)	2.1 ⁵	5.3	252.4
Ecuador	million dollars (US)	3.1	7.2 ⁶	232.2
Guatemala	million dollars (US)	10.1 ⁷	26.5	262.4
India	million rupees deflated by exchange rate index 1892-3	562.5	607.3	108.0
Japan	million yen deflated by exchange rate index	19.0	60.1	316.3
Korea	million yen deflated by exchange rate index	.06	2.95 ⁸	4916.7 ¹⁷
Malaya ¹⁰	million silver dollars deflated by exchange rate index	3.2 ⁹	14.6	456.2
Mexico	million silver dollars deflated by exchange rate index	6.2 ¹³	20.6	332.2
Nicaragua	million dollars (US)	.7 ¹¹	2.7	385.7
Peru	million sols deflated by exchange rate index	8.8 ⁵	22.5	255.7
Philippines ¹²	million dollars (US) con- verted by exchange rate of Mexican pesos to dollars	19.2	19.2	100.0
Salvador	million dollars (US)	2.8 ¹⁴	5.8 ¹⁵	207.1
Straits Set- tlements ¹⁶	million silver dollars deflated by exchange rate index	39.5 ⁹	67.4	170.6
Thailand	million bhat deflated by exchange rate index	9.0 ⁹	24.2	268.9
Vietnam and Indo China	million francs	27.5 ⁵	92.6	336.7
Average of the individual country indices				244.8 ¹⁷

Table 5 (continued)

Notes:

¹Virtually no export data is available for Bolivia for this period due to the fact that its exports move by land through Argentina, Chile, Peru and Paraguay to shipping ports. However, all references that could be uncovered indicated this was a boom period for Bolivia despite territorial losses and financial stress resulting from the war with Chile 1880-1.

²1880

³1890

⁴For 1895 only. China's exports during the year were hampered by war and the loss of Formosa.

⁵1883

⁶1893-5 average.

⁷1883 figure in silver pesos converted to U.S. dollars on the basis of exchange rate for that year.

⁸1896-9 average.

⁹1871-4 average.

¹⁰Tin exports only.

¹¹1871 converted on the basis of exchange rate of that year.

¹²According to Edwin Walter Kemmerer, Modern Currency Reforms, N.Y. MacMillan Co., 1916 after 1877-80 imports of foreign silver currency were prohibited in an effort to maintain the silver price and hence the exchange rate of domestic currency (pesos) in terms of gold currencies in the face of the falling world price of silver. The extent to which the authorities were successful in this respect is not clear as information on local or "black market" exchange rates for that period are not available. Benito Legarda, Jr., makes no mention of exchange restrictions in "Economic Change and Entrepreneurship in the Nineteenth-Century Philippines," Ph.D. dissertation, Harvard University, 1955. To the extent that the exchange rate (in pesos per dollar) was kept below the N.Y. rates of silver pesos per dollar, the dollar figure for 1892-5 underestimates the true dollar figure and at the same time would account for the comparatively slower growth in Philippine exports with respect to other silver standard countries.

¹³1877-8

¹⁴1875

¹⁵1895 converted on basis of exchange rate of that year.

¹⁶Foreign trade only.

¹⁷Korea and Bolivia have been excluded.

Table 5 (continued)

Sources:

- Bolivia: Bulletin of the American Republics [12, Vol. 4, pp. 612].
- Ceylon: United Kingdom, Board of Trade, [101, Part XV, 1871-5, p. 45 and Part XXII, 1894-6, p. 69].
- China: Cheng [18, p. 258] and China [19, 1883 and 1896].
- Costa Rica: Guell [47], and Bulletin of the American Republics [12, Vol. 3, p. 692].
- Ecuador: Carbo [16, especially p. 447].
- Guatemala: Alan Cohen [22], Young [115] and Bulletin of American Republic [12, Vol. 4, p. 1011].
- India: Ray [86].
- Japan: Baba and Tatemoto [5, Table 6-2, p. 167].
- Korea: Paul W. Kuznets [60, Table 1, p. 24].
- Malaya: Van Ooms (unpublished statistics prepared for a study of the Malayan economy).
- Mexico: Mexico [72, p. 75 and p. 153].
- Nicaragua: Levy [63] and Bureau of the American Republics, [13, Bulletin No. 6, May 1891, p. 103].
- Peru: Peru [81, 82], Dunn [32], and Peru [83, p. 32].
- Philippines: United States, Bureau of the Census [103, Vol. IV, pp. 564-5].
- El Salvador: Bureau of the American Republics [13, p. 116], and El Salvador, Direccion General de Estadistica [35].
- Straits Settlements: Van Ooms (unpublished statistics prepared for a study of the Malayan economy).
- Thailand: Ingram [53, pp. 240-241].

Table 6

Exports of Countries with Inconvertible Paper Currencies

<u>Country</u>	<u>1870-5 Average</u>	<u>1892-6 Average</u>	<u>1892-6 Index (1870-5=100)</u>
Argentina (millions of U.S. dollars)	42.5	106.7	251.1
Austria-Hungary (millions of golden [stable gold])	704.6 ⁹	775.0	110.0
Brazil (millions of £)	18.2	31.1	170.9
Chile (million pesos [gold])	92.0 ¹	153.0 ²	166.3
Colombia (millions of U.S. dollars)	9.7 ³	24.8 ⁴	255.7
Greece (million francs)	37.7 ⁷	97.4 ⁸	258.4
Paraguay (millions of U.S. dollars)	1.8 ¹¹	2.9 ¹²	
Russia (millions of rubles, gold)	339.2 ⁵	456.1 ⁶	134.5
Spain (millions of pesetas [gold])	490.0	666.9	136.1
Average of the Individual Indices for the Above Countries			184.4

¹1874 only.

²1894 only.

³1871-3 only.

⁴1891 only.

⁵1871-5 only.

⁶1891-1894.

⁷1869-70.

⁸1890 converted from drachmas to francs
on basis of average exchange rate

⁹1883-5 average.

¹⁰Colombia was on the gold standard until 1886.

¹¹1881-3 average.

¹²1890-1 only

Sources: Argentina: National Association of Manufactures [75].

Austria-Hungary: Austria-Hungary [4, 1886, p. 171 and 1896, p. 207].

Brazil: Brazil [10].

Chile: Fetter [38].

Colombia: Garcia [45].

Greece: Tumlr [99, p. 197].

Paraguay: De Bourgade la Dardye [28] and Schurz [92].

Russia: Willis [114].

Spain: Vives [112].

able to obtain data does not correspond in many of the cases to those of the previous tables. However, in general the time span covered by Tables 5 and 6 is shorter than that of the previous tables and hence is likely to understate the true export growth of silver and paper standard countries over the two decade period between the early 1870's and middle 1890's.

Despite these and other shortcomings of the statistics, the figures should be sufficient to demonstrate that the export performance of both the paper and especially the silver standard countries was radically different from that of the gold standard countries. As the average indexes presented in Tables 5 and 6 indicate, the average silver standard country's exports increased 144.8 percent and the average country on inconvertible paper currency (most of which were devaluating with respect to gold) increased its exports by 84.4 percent.²² Thus, exports in the average silver country increased by more than 4 percent per annum or more than four times the growth of exports in gold standard countries! In contrast to the 28 gold standard countries or colonies whose exports fell in value terms, there is no evidence that any silver or paper country experienced a decline in the (gold) value of its exports.²³

²² It has not been possible to weight the individual countries in the aggregate index by the size of exports (or any other appropriate weighting factor) due to lack of consistent and reliable information of exchange rates between the different silver and gold currencies. If weights had been applied it is quite conceivable that the weighted average index would show a somewhat smaller rate of growth in exports since some of the big countries (India, China and the Philippines) had the slowest growth rates of the countries in this group. However, since other large exporters (Japan and Mexico) were among the best performers, since Korea, the best performer, was not included and because as explained in footnote 12 of Table 5 exports of the Philippines for the 1890's are undoubtedly understated, the exaggeration of the overall rate of growth of exports of silver countries is probably not great.

²³ If earlier statistics had been used for Peru, they would have shown a decline but only because Peru lost territory in its war with Chile which produced the bulk of its exports prior to 1880.

The variation in export growth even among silver countries is of course quite substantial. However, most of the more significant differences can be roughly accounted for by the other factors mentioned above. For example, the extremely rapid growth reported for Korea must certainly be largely attributable to the "opening up" forced upon Korea in 1876 by Japan which radically changed this country that had formerly been characterized as "hermit kingdom." The law and order effect of British influence undoubtedly had much to do with Malaya's performance. Mexico's impressive performance was probably assisted by the abolition of the "alcabala," or transit tax imposed by individual states and municipalities on trade between regions and towns within Mexico (Limantour [66]).

On the other hand, the seemingly poor performance of the Philippine Islands can be explained as follows: first, as explained in footnote 12 of Table 5, the authorities evidently tampered with the exchange rate after 1880 in a deliberate effort to prevent the implicit devaluation, and thus the Philippines should perhaps not be classified as a silver country in the same sense. Second, to the extent the authorities succeeded in this effort, the dollar figures for exports of the 1890's, which have been arrived at by conversion of original pesos to dollars, at the New York rate quoted for conversion of Mexican peso to dollar undoubtedly seriously understate the true dollar value of Philippine exports for that period. Third, a somewhat below average performance would be expected on the basis of the fact that the prices of two of its major export commodities (sugar and abaca) fell considerably more rapidly than world prices in general. Moreover, according to Stephen Resnick's unpublished worksheets, Philippine exports grew in real terms between 1875 and 1893 at a rate of more than

4.5 percent per annum regardless of whether 1857 or 1893 weights are used. This record would establish this period as the second or third greatest boom period in recorded Philippine history!

While India showed only an 8 percent increase in value terms, it is quite clear that exports were booming in real terms. Using the 11 largest export products²⁴ for which volume and value data are provided in Ray to compute an aggregate volume index, we have found the rate of growth of these Indian exports in real terms to be more than 15 percent per annum over the period 1873-4 to 1891-2. India registered a remarkable 18-fold increase in wheat exports over the period. It is no wonder then that U.S. farmers were prompted to complain of unfair competition from India, as ironic as it would seem today.

The comparatively slow growth in Ceylon would seem to be understandable in view of the fact that Ceylon had to completely rebuild its export industry after its principle export crop was wiped out by the coffee leaf disease in the 1870's and considering that the first two attempts to replace coffee failed for technical reasons.²⁵

Similarly, the comparatively poor Chinese performance can probably be attributed to (1) the virtually complete absence of transport facilities connecting the few "open ports" on the coasts with the interior, (2) the high and rising "likin" or transit tax rate--rising because it was largely a specific tax and prices were falling--(3) internal chaos and banditing, and (4) the absence of adequate financial institutions. Finally, it is perhaps

²⁴The products included were cotton, opium, seeds, rice, wheat, cotton manufactures, jute, tea, indigo, hides and skins, wool, and coffee.

²⁵See Snodgrass [95].

²⁶See Cheng [18].

appropriate to repeat the point made earlier²⁷ that since the trade in Chinese junks was not included in the Chinese trade statistics and because unrealistic exchange rates were used in export evaluation, the growth of Chinese exports during this period is undoubtedly understated. Furthermore, China lost the important export producing island of Formosa and also the Pescadores Islands to Japan in 1895, and hence Chinese exports of the middle 1890's are not exactly comparable with those of the mid-1870's.

Even though most of the paper countries devaluated their currencies substantially with respect to gold, they do not offer the same advantages in terms of the automaticity of devaluation. In many cases the inconvertibility of their currencies was prompted by difficulties in financing wars or in servicing their foreign debt and for one reason or another many of these countries suffered from instability, inflation and other problems to a greater degree than did the silver and gold countries. For these reasons very little attention will be paid to them. However, it might be pointed out that in general the slowest export growth was attained in the countries which moved toward the gold standard at the end of the period as in Austria-Hungary and Russia, and the most rapid growth was attained in countries such as Colombia, Brazil and Greece which moved further away from parity with gold--thereby providing some limited additional support for the importance of exchange rate policy on the growth of exports.

Finally, in order to be as complete as possible and thereby to reduce the possibility that countries which we have not been able to include in tables 2-6 for lack of data, would have displayed export performances at

²⁷ See footnote 9 above.

variance with those of the other gold and silver countries covered in these tables, we present in Table 7 comparable data on imports of the United States from each of the other countries of North and South America, and in Table 8 the imports of Great Britain and France from some countries for which data was either not presented in the earlier tables or was not considered very reliable.

Since these statistics refer, of course, only to a portion of a particular country's exports, they are certainly not as reliable indicators of performance as the data in the previous tables. Nevertheless, they offer some indication of some additional evidence. For example, Table 7 shows that Santa Domingo, the lone Caribbean country on silver, increased its average annual exports to the U.S. in 1893-5 to more than five times its 1870-4 average while each of the other gold standard countries in the region (Cuba, the Danish, French and Dutch West Indies, Puerto Rico, and to a lesser extent Haiti) displayed extremely poor export performance. Table 8 offers some indication that the export industries of the Portuguese and Spanish colonies (all effectively on a par with gold) may also have experienced extremely bad times.

The results presented in these tables would seem to be quite consistent with our previous estimate that the merchandise exports (in value terms) of gold standard countries may have been growing at about 1 percent per annum while those of silver standard countries were probably growing at better than 4 percent per annum, give or take a percent. While it has not been generally possible to estimate the growth in volume of exports, where we have been able to obtain such estimates, the rate would seem to be at

Table 7

U.S. Imports from the American Countries and Colonies

(in millions of U.S. dollars)

<u>Silver Countries</u>	<u>1870-1874 Average</u>	<u>1893-1895 Average</u>
Central America	1.4	10.7
Chile 1,4	.9	4.0
Ecuador ²	.4 ³	1.2
Mexico	8.0	22.1
Peru ⁴	1.6	.7
Santa Domingo	.4	2.3
Total	12.7	41.0
<u>Gold Countries</u>		
British Guiana and West Indies	8.4	11.4
Canada	42.1	33.9
Cuba	72.6	64.5
Danish West Indies	.6	.4
Dutch West Indies	1.1	.1
French West Indies	1.7	.0
Haiti	1.4	1.8
Puerto Rico	9.7	2.3
Uruguay	2.9	2.0
Venezuela	4.0	6.8
Total	144.5	123.2
<u>Paper Countries</u>		
Argentina	7.7	5.6
Brazil ⁶	31.3	86.2
Colombia	5.9	3.0
Total	44.9	94.8

Notes:

¹Chile was on inconvertible paper throughout part of this period.

²Ecuador was on paper prior to stabilization and devaluation in 1884.

³1893 only.

⁴Chile obtained a considerable amount of land from which minerals were exported from Bolivia and Peru as a result of war won by Chile 1880-1881.

⁵Colombia was on gold standard until 1886 and thereafter on inconvertible paper.

⁶Brazilian exchange rate remained constant with respect to gold currencies until a series of devaluations beginning in 1890-1891.

Table 7 (continued)

- Sources: 1870-2: Bureau of the American Republics [13, pp. 32-4].
- 1872-3: U.S. House of Representatives [105, Third Session, 42nd Congress, p. 79].
- 1873-4: U.S. House of Representatives [105, First Session, 43rd Congress, p. 101].
- 1893-4: U.S. House of Representatives [105, Third Session, 53rd Congress, Vol. 26, No. 6, P. LVII].
- 1894-5: U.S. House of Representatives [105, First Session, 54th Congress, Vol. 30, N. 13, Part 1, p. XXXII].

Table 8

French and British Imports from Gold and Silver Countries and
Colonies for which Data is Completely or Totally
Missing in Other Tables

<u>Gold Standard Countries</u>	British Imports in millions of British £		French Imports in millions of francs	
	<u>1872-4 Average</u>	<u>1892-4 Average</u>	<u>1870-5 Average</u>	<u>1894-6 Average</u>
Algeria	438	596	108	185
Azores	317	65		
Canary Islands	419	285		
Cuba and Puerto Rico	4788	155	30	15
Dutch Guiana	167	26	1	1
Dutch West Indies	52	17		
Fernando Po	32	5		
Haiti	358	63	35	71
Italy	3862	3105	440	215
Macao	1106	6		
Madeira	74	62		
Morocco	785	555		
Portuguese Africa	127	72		
Switzerland			320	335
Tunis and Tripoli	177	346		
Turkey	5784	5142	182	133
Uruguay	<u>1375</u>	<u>229</u>	<u>39</u>	<u>29</u>
Total of Above Countries	18,861	10,729	1155	984
<u>Silver Standard Countries</u>				
Bolivia			.02	.22
Ecuador	286	187	1.9	9.9
Guatemala	1000	1100	1.7	6.5
Indochina	19	89	.6	19.7
Japan	400	980	57.2	74.8
Mexico	497	531	7.5	13.2
Philippines	<u>1405</u>	<u>1981</u>	<u>1.6</u>	<u>5.4</u>
Total of Above Countries	3607	4868	70.5	129.7

Sources: Great Britain: United Kingdom, Board of Trade

France: France, Direction Generale des Douanes

least three or four times the rate of increase in value of exports--generally a higher multiple in silver standard countries (due to more rapidly falling export prices) than in the gold standard countries. Even the apparently slowest growing silver standard countries were in real terms undergoing a more or less continuous export boom of considerable magnitude.

V. Other Growth Indicators Compared

According to the findings of the previous section there would seem to be much support for the existence of a positive effect of continuous devaluation on long-run export performance. It remains to be seen, though, to what extent and in what direction export growth resulting at least partially from devaluation has affected economic welfare and development in a broader sense.

Unfortunately, statistical limitations make it impossible to obtain more fundamental indicators of development, such as per capita income, for a reasonably large sample of countries. We shall proceed by surveying individual gold standard and subsequently silver standard countries utilizing national income statistics wherever possible and supplementing them with relevant descriptive material. In order to focus more narrowly on the development process, from now on we shall confine our attention almost exclusively to countries in the beginning stages of economic development.

A. The Gold Standard Countries:

DUTCH EAST INDIES

Perhaps the most interesting experience among the various countries on the gold standard was that of the Dutch East Indies. The Dutch East Indies provides an interesting example not only because it was the only major

gold standard country in Asia in the period under investigation, but also because the period 1870-1894 was a unique period in the long and varied experience of Dutch rule in which liberalism (at least by Dutch colonial standards) prevailed.²⁸ Among the reforms undertaken in this period were (1) the granting of rights of private ownership (especially of land) to natives, (2) importation of Chinese to assist development, (3) a dramatic step-up in development expenditures of the government (mainly on roads with the specific purpose of speeding transportation of commodities for export, but also on irrigation, education, harbors, experimental stations, forestry services, and internal communications), and (4) a cut in export tax rates.

What was the outcome of these impressive development-oriented reforms and programs in a period of falling export prices and exchange appreciation relative to neighboring silver countries? Hard data is unfortunately lacking but a few impressions may be sufficient. For one thing there were a series of bank and business failures ending in mergers and monopolization. Furnivall notes that neither imports nor production of cotton goods and rice (the most important wage goods) were able to keep up with population growth between 1875 and 1900, indicating a decline in the welfare of the masses.

"The native not only drew lower wages, but he had less work, as the economies consequent on the crisis, such as the substitution of imported fertilizers for stable manure, of imported gunny-bags for home-woven baskets and of light railways for carting, left the people with fewer opportunities to earn money" (Furnivall [44, p. 214]. (Note how indicative these phenomena are of an increasingly overvalued currency!) One consequence of the reforms was that, in contrast to previous periods in which administration

of the Dutch East Indies generated a sizeable revenue surplus for use in Holland, the Dutch East Indies became for the first time a deficit operation. As a result of increased costs of administration with so little to show for it in terms of development (e.g., Table 4 showed that the increase in the value of exports was less than 30 percent in 20 years). It is no wonder that after 1895 the Dutch reverted back to interventionism and paternalism rationalized by the Dutch economist-administrator J. H. Boeke in his well-known theory of social dualism:

"When the native, the tani, enjoyed the growing of a crop no care or labor was too much for him. But he could find real pleasure only when the product satisfied one of his own needs, and these needs were few, unexact and of little variety. As a rule, the tani did not, of his own accord, produce for the Western market--or, indeed, for any market, if in an exceptional case he did so, it had to be with the slightest possible expenditure of labor and other costs, therefore, through some form of quite extensive cultivation. In other words, the exertion was worth his while only if he could gather the harvest without having been obliged to pay much attention to the growing of the crop." Boeke [9, p. 2].

One wonders how much Boeke's views, and for that matter the modern history of the Dutch East Indies might have been altered if this rather unique period of liberalism had been born into an environment in which the economic incentives for increased production and export, such as might have been provided by a depreciating currency, would have existed!

EGYPT

The experience of Egypt was in many ways similar. Egypt was on a bi-metallic standard and effectively on silver until 1885 and only thereafter switched to gold. Although the Egyptian case is complicated by national bankruptcy and an austerity program imposed by foreign creditors, despite enormous capital expenditures on dams, transportation, etc., Egypt stagnated. Once again per capita consumer goods imports declined sharply--indicating a decline in the per capita income of the masses. Mead [71] notes a rise in unemployment and underemployment in the 1890's and attributes it entirely to the fact that the Delta Barrage Dam of 1890 reduced labor requirements by raising the water level in the irrigation canals. In view of the findings of our comparisons of silver and gold standard countries and the theoretical expectations outlined in Section II, we might suggest with some confidence that the exchange rates may have had something to do with it by favoring imports to domestic import substitutes or exports and lowering the prices of imported capital goods relative to labor.

NEW ZEALAND

About New Zealand after 1880 we learn the following:

"There followed the gloomiest period of the country's history: all but absolutely necessary expenditure was checked, development was suspended, public soup-kitchens were found necessary, civil servants had their salaries retrenched 10 percent all round.

Scholefield in "The Evolution of New Zealand" talks of unemployment, sweating, lowered wages, and general stagnation of industry...

A Sweating Commission found evidence of unhealthy crowding, and

of overwork of women and girls,..... . Not only were money wages falling faster than prices but unemployment was scarce and insecure." (Condliffe [25, p. 955]).

Condliffe goes on to show that even the marriage rate (standardized for population growth) showed a drop of more than 20 percent between 1871-5 and 1891-5 [25, p. 951-2]. Thus it would seem that even New Zealand, which according to Table 2 was perhaps the star export performer among the gold standard countries, shared with the other less developed gold standard countries stagnation, unemployment and probably some decline in per capita income.

OTHER GOLD STANDARD COUNTRIES

In Australia population exactly doubled between 1874 and 1897 from 750,000 to 1,500,000, while according to Butlin [14, Table 269, p. 460] real GDP (in 1910-11 prices)--which had doubled between 1861 and 1873--rose only from £95.9 million to £173.8 million in 1897. Hence per capita income declined in Australia as well.

In Jamaica, according to Eisner [34, p. 289], per capita income showed no growth between 1870 and 1890 despite relatively favorable prices for most of its main exports (especially wood, ginger, bananas, and cocoa), and unusually cheap land.

Clough [21, p. 369] reports a figure for Italian per capita income in 1938 prices of 1895 lire in 1871-5 and one for 1891-5 of 1888 lire again indicating a slight loss in real per capita income.

Because of its lesser dependence on international trade and no doubt an enormously beneficial opening-up from the railroad boom, the United States

was evidently able to record a fairly satisfactory increase in real per capita GNP,²⁹ but this record seems to have been unusual even for the more highly developed countries on the gold standard.³⁰ As it would appear from the evidence cited above for several of the less developed gold standard countries, the poor performance of exports would seem to have carried over to per capita income as well. Thus, it seems unlikely that per capita income increased at all in these countries during the entire two decade period, and in several such countries real per capita income probably fell.

B. Devaluating Countries on Silver and Paper Standards

MEXICO

Although "hard data" are hard to come by for Mexico, the following description of the period should show that the Mexican experience of 1870-1900 was very different from that which has been observed for the less developed gold standard countries during the same period of time.

"In the 30 years preceding the Revolution of 1910, it seemed that Mexico was on the path of sustained growth in per capita production as the result of domestic peace and of the absorption of the Mexican economy into the world economy. An inflow of foreign capital was making possible the construction of railroads, the extension of mining, and an increase of foreign and domestic trade." (Edminster [33, p. 332].

²⁹According to statistics published in United States, Bureau of the Census [104, p. 7 and p. 144], per capita GNP in the U.S. at 1929 prices rose at well over 1 percent per annum.

³⁰Even in industry, an index of industrial production for the major gold standard countries shows that industrial production did not much more than double in the period, thus indicating rather slow growth in per capita terms. [111, p. 69].

What statistics there are of the industrial sector show that in the 20 year period between 1878 and 1898 textile production tripled and mining--metallurgy more than quadrupled its real output.³¹

ARGENTINA AND BRAZIL

While Argentina and Brazil were on inconvertible paper and therefore not exactly comparable with the silver countries it is interesting to note the amazing degree of development achieved within the brief periods in which devaluation was most pronounced--the 1880's in Argentina and the 1890's in Brazil.

"The decade from 1880 to 1890 is the great 'boom' period of Argentine economic history. It is not too much to say that in those 10 years Argentina underwent a greater economic development than in all the preceding decades of the century." (Williams [113, p. 27]. (Subsequent to 1891, especially in 1894, Argentina's paper currency appreciated and panic, and bankruptcy even of the national and provincial governments resulted. (Williams [37].

Meanwhile in Brazil, according to Baer [6, p. 15] the number of industrial establishments almost doubled in the six years between 1889 and 1895 in which several large devaluations took place. Most significant was the development of the jute manufactures industry in Sao Paulo catering to the large and thriving coffee export industry.

RUSSIA

All the available evidence seems to suggest that Russia enjoyed very

³¹This data is available in Mexico [72, p. 106].

significant growth during this period before going on the gold standard herself at the end of the 19th century. For example, Goldsmith [46, p. 446 and pp. 462-3] shows that crop production almost doubled between 1871 and 1894, while industrial production tripled.

CEYLON

Despite the unusual technical difficulties experienced by Ceylon, it is quite clear that her most satisfactory development extended beyond the confines of agriculture. Employment data provided by Snodgrass [95, p. 322] shows that employment in manufacturing and mining more than doubled between 1881 and 1901.

Gunasekera points out that Ceylon, like several of the other silver countries, experienced an investment boom based largely on foreign capital.

"Ceylon, in fact, was experiencing during this period a vast investment boom. Contrary to the generally held view, the depreciation of the exchanges was no hindrance to the investment of British capital. In the island the Swettenham Commissioners remarked: 'The evidence we have is conclusive that the fall (in the exchange) has not prevented the introduction of all necessary English capital and it is stated that there is more capital offering for investment on reasonable terms than has been the case before'."

Even on the much discussed difficulty that the debtor colonial governments were alleged to have had in paying fixed obligations in gold while currency devaluation was taking place, the Ceylonese experience, as viewed by the Swettenham Commission, seems most convincing.

"The greatly increased number of rupees required to meet these obligations

is beyond question a very serious matter, but so far the satisfactory increase in revenue has enabled the finance of the colony to bear the enhanced claims without embarrassment. The Commission is of the opinion that the prosperity of the producing interest is the main cause of the satisfactory condition of all items of colonial revenue, and that if prosperity were materially checked by a change in currency which also effected a saving to government in its gold obligations, the direct saving might not be a sufficient compensation for the probable shrinkage in revenue." (As quoted by Gunasekera [48, p. 114].

INDIA

According to estimates of Mukerji [74, p. 701], India's per capita income in 1948-9 prices increased from 177 in 1871-79 to 203 in 1886-99. If this is correct, it would represent the largest two-decade increase in real per capita income in Indian history with the single exception of the World War I boom and the 7 or 8 years thereafter when India's (gold) currency depreciated sharply with respect to silver! Again it would seem that a significant amount of industrialization was also achieved. Varshney [109] shows that between 1879 and 1892 the share of manufactured goods in total imports declined from 65 percent to 57 percent while the share of manufactures in exports rose from 8 percent to 16 percent.

CHINA

In Section IV, above, we reviewed a number of the more overriding obstacles to economic development in China between 1875 and 1895. It might be appropriate to mention another--the series of natural disasters which ravaged

China in the late 1880's and early 1890's. According to Remer [88] the Yellow River flood of 1888 killed two million people; the drought of 1893-4 killed another one million and the Mohammedan Rebellion immediately thereafter another one-fourth million.

For these reasons and for lack of statistical material it might be reasonable to attribute the somewhat lacklustre performance of the Chinese economy in this period to special factors and to seek evidence on China for another period to determine whether something in the Chinese environment would again make for an outcome less successful than that experienced by the other devaluating countries. China was virtually alone in remaining on the silver standard continuously until 1935. There is therefore another period--albeit a much shorter period--between 1925 and 1931 in which the price of silver was falling with respect to gold at a fairly rapid rate.³² This was, of course, not a very prosperous period especially after 1929 elsewhere in the world. For example, in the U.S., real per capita GNP fell sharply and exports in value terms dropped off disastrously from \$4.9 billion in 1925 to \$2.4 billion in 1931 and \$1.6 billion in 1932 reflecting sharp drops in both export prices and export volume. Export volume alone dropped by more than 35 percent during this brief period.³³

Meanwhile, China was not only able to maintain the volume of exports but to increase it slightly from 132.9 to 136.5 (in index numbers provided by Cheng [18, p. 259]. Apparently, China's avoidance of the Great

³²The price index of silver in U.S. dollars fell from .694 in 1925 to .290 in 1931 (Cheng [18, p. 263]).

³³These figures are based on those published in United States, Bureau of Census [104, p. 537 and 541].

Depression--at least until the appreciation of silver (1932-5) which prompted China to depart from the silver standard in 1935--was a unique one. China's export performance was not the only astonishing achievement. The number of factories with more than 30 factories more than doubled between 1925 and 1933;³⁴ the index of industrial production prepared by Chang [17, p. 66] showed an increase of 35 percent in these same six years in which the world index at industrial production used by Lewis [64, p. 107] showed a decline of 7 percent. China was transformed from a net importer of cotton yarn to a substantial exporter. This progress is even more remarkable if one considers the fact that many of the same obstacles to development we have noted in the previous period persisted. The "likin" taxes were not eliminated until late 1931. There were still no uniform weights and measures, no corporation laws for Chinese firms, and no patents; illiteracy was almost universal. As Cheng describes it:

"China was, for most of the period, in a state of instability, chaos, and anarchy, torn by internal dissensions and partitioned geographically by regional war lords.... Economic barriers such as 'likin' and other local tolls and taxes, were too numerous to enumerate. Trains were often derailed and destroyed, rolling stocks seized, vessels commandeered by the warring parties to disrupt commerce and industry" [18, p. 37].

JAPAN

Perhaps the star performer among the major silver countries in the period under investigation was Japan. Patrick's deflated version of Ohkawa's

³⁴Cheng [18] gives the number of such factories in 1926 as 1457 and in 1953 as 3450.

national income statistics [80, p. 201] shows that Japan's real national income virtually toppled between 1878 and 1898. To avoid the possibility of distortions due to weather, Kuznets utilizes 5 year averages [61, p. 269] which show that even real per capita GDP was growing at 3 percent per annum. In providing incentives in terms of higher producer prices and increased export opportunities, the falling exchange rate may help explain the rather phenomenal rate of increase in total agricultural productivity of almost 2 percent per annum (Hayami and Yamada [49a, p. 157] Rosovsky [50, p. 321] provides data in domestically produced capital goods which shows an almost thirty-fold increase in real terms between 1873 and 1897 so that by the turn of the century the capital goods sector accounted for more than 5 percent of industrial output. In view of the effect of exchange rate devaluation on the price of imported capital goods, and in view of the rapidly expanding investment opportunities in many export sectors, the formation of a domestic capital goods industry should not seem surprising. This rapidly developing capital goods industry may have contributed more than its share of GNP by helping to provide Japan with a technology more appropriate to Japanese factor prices and conditions than the technology available from western countries.

It should be admitted that Japan had many things going for it besides the depreciation of silver--ranging from its heavy emphasis on the incentive-creating land tax to its rich cultural strength and heritage which was capable of resisting any unfavorable international demonstration effect on savings rates. Nevertheless, the role of exchange depreciation in this

growth process would seem to be worthy of greater attention.³⁵

VI. Summary, Conclusions and Some Reservations

While there has been a voluminous theoretical literature on the immediate effects of exchange devaluation, the long-run effects on development effects have been almost completely neglected. We have presented a brief outline of our own views about the nature of this relationship--emphasizing its effect on both the demand and supply side of exports and via exports on (1) technological change and efficiency, (2) capital formation and (3) employment. Although some recent attention has been devoted to the role of exchange rate policy in determining export performance, most of these studies have not been very successful in isolating this effect. We have argued that one of the main difficulties encountered in time series analysis of this kind is the fact that, in addition to the positive effect which exchange rate devaluation would be expected to have on exports, in the long run exports would be expected to affect exchange rates negatively, thereby plaguing any such analysis with the simultaneous equation bias.

In an effort to mitigate the influence of this bias, we have chosen to study the period between 1874 and 1894 when the currencies of the vast majority of countries in the world were convertible into either one of two metals--gold or silver. Since the price of silver in terms of gold fell by approximately 50 percent during this period, the silver standard countries implicitly and automatically devaluated with respect to gold countries

³⁵ Note, however, that Patrick [80] and Baba and Tatemoto [5] have recently devoted considerable attention to the relationship between exchange rates and Japanese economic growth in the last 20 years of the 19th century.

by an equal amount. Since there were quite a few countries on each standard in each region, level of development and other relevant characteristics, a comparison of the silver (and paper) standard countries, on the one hand, and the gold standard countries, on the other, with respect to export performance and other indicators of development offers many advantages. In Section III we argued that previous studies of these relationships in that period, not all of which yielded results supporting the relationship between exchange devaluation and export growth, have suffered from several defects--both logical and empirical--which would seem to warrant a reinvestigation utilizing an international cross section of individual time series.

Although most of our attention has been limited to countries at lower levels of development, our results provide strong evidence for the generality and considerable strength of the relationship between exchange rate devaluation and both export performance and overall development.

The less developed gold standard countries were generally characterized by extremely slow growth of exports and income, which in per capita terms meant stagnation or even decline and frequently resulted in financial crisis, unemployment and underemployment, excessive substitution of capital for labor and of imports for domestic production, and reduced private capital inflow to a trickle.

In contrast, most of the silver standard countries enjoyed a rate of growth in exports in both value and volume terms three, four or more times that of the gold standard countries. None of the silver standard countries suffered from unemployment. Most of the silver countries experienced rapid growth in real per capita income, investment booms (assisted by sizeable

inflows of foreign capital, labor and managerial capability), and conspicuous improvements in efficiency.

Some implications of this analysis for theory are (1) that more work should go into detailing the various alternative mechanisms by which exchange rates affect long-run development and thereby to lay the foundation for further empirical work in which it might be possible to establish the relative importance of each of these mechanisms, (2) that theoretical and empirical investigations are needed in order to establish conditions under which devaluations will be most successful and to determine the optimal rate of exchange devaluation from the standpoint of development.

The policy implications would seem to be straightforward: continuous exchange rate devaluation can be extremely beneficial to development even when a number of other countries devalue at the same time. In fact, the customs union effect of simultaneous devaluation would seem to have been strong and healthy. It provides the same benefits of an ordinary customs union without some of the political problems and administrative costs that go along with common markets. Yet it also provides important incentives to extra regional exports. Given the rather bleak prospects for transferring sizeable amounts of foreign resources from rich to poor nations, the simultaneous and continuous devaluation of LDC currencies with respect to the currencies of rich nations would seem to offer an alternative means to the same end that is simpler to administer, perhaps more certain to be effective, and undoubtedly politically more feasible.

Nevertheless, it is necessary to state several reservations. In the first place, we can expect that the last quarter of the 20th century will

differ from the same quarter of the 19th century in several important ways:

- (1) Capital and labor were more mobile in the 19th century than they are likely to be in the near future. The ability of resources to move to the areas of the world in which the incentives for export had been created contributed significantly to the success of continuous devaluation.
- (2) In the absence of monthly computations of cost of living indexes, labor may have been more vulnerable to a money illusion than now, thereby facilitating increases in employment by camouflaged reductions in real wages.
- (3) The automaticity of devaluation which make it politically much more palatable might be hard to duplicate in the framework of contemporary international and national monetary institutions.³⁶
- (4) Quantitative restrictions are likely to play a significantly larger role in international trade in the next 25 years than they did in the period studied in this paper. Such restrictions, of course, limit the effectiveness of devaluation.

Secondly, until it is possible to discriminate more effectively between the various mechanisms through which exchange depreciation affects economic development, the possibility that the relationship is only spurious shall remain.

Thirdly, a reservation concerning data limitations needs to be stated. In as much as the data utilized in this study have been drawn from many

³⁶ For an interesting investigation of the seriousness of the political consequences of individual devaluations by less developed countries in recent years see Cooper [26].

different sources, often of dubious reliability, whose methods and sources have not generally been investigated, and as better or more complete data become available, the empirical results might well be subject to change.

Finally, it should be admitted that our estimate of the favorable impact of devaluation on development in LDC's is a gross estimate and not net of the unfavorable effect which devaluation on the part of the silver countries imposed upon the non-devaluating countries. From a world welfare point of view, the net effect either on the world as a whole, or even on the devaluating countries alone (owing to the limitations which slower growth and balance of payments problems in the non-devaluating countries would be likely to impose on their ability and willingness to export capital) would likely be smaller than the gross effects. Nevertheless, trade, which in any case is likely to be increased by the devaluation, is undoubtedly a positive sum game and thus the gains of the devaluating countries in a realistic (dynamic) sense are likely to greatly outweigh the loss to the non-devaluating countries.

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