WTO

Created: 11/9/2011 2:23 AM

Source: http://economictimes.indiatimes.com/opinion/comments-analysis/wto-bali-conference-a-new-hope-for-doha-round/articleshow/23614622.cms

IS INDIA UNDER-PROTECTOR OF INTELLECTUAL PROPERTY?

- Even as the campaign by U.S. drug majors to paint India as a haven for intellectual property pirates intensifies, the government has swung into action to stem the false propaganda.
- Recently, India's Ambassador to the U.S. Nirupama Rao argued that India is not on mission to kill all patents. Rather, it has only invalidated those undeserving of protection under India's stringent statutory standards. And it did so through transparent judicial processes and not through executive fiat as did the U.S. recently, when it overturned a patent ruling from a specialised trade court, the International Trade Commission (ITC), to favour home-grown Apple at the cost of foreign Samsung.
- The Indian Supreme Court, in a landmark judgment in April, turned down a request by the pharmaceutical company Novartis to retain the patent on a cancer drug because it judged the drug to be an extension of existing medications, not a groundbreaking advancement.
- In fact, a U.S. court invalidated a Pfizer patent covering a blood pressure medication (Norvasc) on grounds very similar to the Novartis decision, i.e. mere physical advantages cited for the salt form such as increased stability and solubility were not good enough to merit patent protection.
- The problem perhaps is one of perception. Our mainstream media continues to paint a rather harrowing picture of India's patent ethos, lauding over patent axes and ignoring patent wins. Illustratively, when two of Glaxo's patents covering a breast cancer drug (Tykerb) were challenged before India's specialised IP tribunal, IPAB (Intellectual Property Appellate Board), the main patent covering the basic compound was upheld and the secondary patent covering the salt invalidated. While our media hailed the death of the secondary salt patent, they all but ignored the more important primary patent that had been upheld. This creates a rather one-sided perception.
- No doubt, India's IP tribunal has liquidated more patents than its counterparts in other parts of the world, but a dispassionate look at the overall patent numbers will indicate that the situation is not as grim as it is made out to be.
- In fact, if one were to dig deep, one realises that India is as guilty of overprotection as it is of under-protection. For instance, recently courts were issuing extraordinary orders to prevent music copyright infringement including orders to block entire websites; orders never known to have been issued anywhere else in the world.

3 Pillars of Bali

Trade facilitation, Agriculture and Development

1. Industry in India supports a trade facilitation agreement at Bali. The industry is of the view that such an agreement could go a long way in bringing down transaction costs that is critical to tap markets in the current global economic environment.
2. But there is a word of caution emerging from the industry. It is clear that the burden of financing these obligations should not fall on the private sector. Any such additional cost burden on the private sector would then take away the benefit of an agreement, which is aimed at cutting costs of exports and imports.
3. Developing countries also think the proposal on table at present on trade facilitation only increases the burden on developing countries by forcing them to upgrade their export infrastructure without any reciprocal commitment on the part of developed countries for financial assistance or technology transfer.
4. The third element is development, which includes LDC specific issues -- namely duty and quota free market access, operationalisation of waiver on services, cotton and preferential rules of origin.
5. India along with other developing countries had raised objection to the clause, which calls for a sufficient time gap between the announcement of change in tariff to its coming into effect. This would be against India's

constitution, since most of the budget announcements related to tariffs come into effect within 24 hours.

6. We have informed WTO that there needs to be some restriction on the scope of expediting shipment, and should be only limited to air cargo and that too very urgent ones.

W T O & *Plurilaterlism*

1. WTO, it seems, is slowly moving away from being a multilateral institution to a plurilateral (covering only a select few members) institution.
2. Except a few areas of negotiations that are on the table, many texts that are in advanced stages of negotiation are for a plurilateral agreement.
3. This includes negotiations for government procurement, information technology agreement-II and a services agreement.

Food Security & WTO

1. The proposal moved by G-33 countries to protect food security, livelihoods and rural development in the Doha Development Agenda, seeks amendments in the revised Doha draft modalities for agriculture.
2. Knowing that procurement of wheat and rice under the National Food Security bill will rise manifold, India is wanting that the enhanced subsidy outgo for food procurement from small farmers as not being seen as a trade-distorting subsidy support.
3. These subsidies, required to meet the food security needs of the hungry population, should be outside the maximum limit of 'Aggregate Measurement of Support' (AMS) that each country has to adhere to.
4. The food the developing countries buy at a minimum support price from 'low-income, resource poor farmers' should not be computed in the AMS limit.
5. While developed countries are projecting trade facilitation as a sure thing at the Bali ministerial meeting, developing countries want a deal to allow them to increase their ceiling on food subsidies above what is permissible at present.

Peace Clause

1. A so-called "peace clause" in WTO parlance gives legal security to member countries and protects them from being challenged under other WTO agreements.
2. It refers to Article 13 of the AoA. Article 13 holds that domestic support measures and export subsidies of a WTO Member that are legal under the provisions of the AoA cannot be challenged by other WTO Members on grounds of being illegal under the provisions of another WTO agreement.
3. The Peace Clause has expired on January 1, 2004. It is now possible, therefore, for developing countries to use the WTO dispute settlement mechanism in order to challenge, in particular, U.S. and EU export subsidies on agricultural products.
4. Developed countries are saying they area ready for a peace clause for a period of two to three years. Developing countries are saying if there has to be a peace clause, it should be an interim solution till a permanent solution is found, so that there is pressure on the developed countries to find a permanent solution.
5. G-33 countries are of the opinion that if the peace clause has to be time bound, it should be for 10 years. In the Uruguay round also, the peace clause was implemented for eight years

Importance of WTO for India in the Changing World

1. US wants to include issues such as labor and environmental protection, reform of state-owned enterprises (SOE) and trade-related investment measures in the trade talks. And because it is facing serious issues in getting these incorporated in the WTO agenda, it is pushing these rules in the bilateral and plurilateral deals including the Trans Atlantic Partnership and the Trans Pacific Partnership.
2. Another key objective of the US is containment of China. Not being left behind, China too is working on an ambitious trade pact called Regional Comprehensive Economic Partnership (RCEP). This aims to bring together both ASEAN and non-ASEAN members of the Asia-Pacific region, including Japan, Korea, Australia

and New Zealand, which excluding the US, of course.
3. Members of both TPP and RCEP are major trading partners of India. So if India remains outside, it will have to deal with serious trade and investment barriers. But joining them won't be easy either. Joining RCEP means having a free trade agreement with China! Joining TPP means adopting its labor, trade and investment guidelines.
4. So WTO remains best option for India.

WTO Dispute with US on Solar Panels

1. US launched a formal WTO dispute with India on the mandatory domestic content requirements for solar cells and solar modules under the Jawaharlal Nehru National Solar Mission (NSM). Japan and Australia have also asked to join the consultations.
2. Phase I of the NSM required that for projects using modules with crystalline silicon technology all modules be sourced from India, while leaving it open to developers using thin-film technology to source modules from anywhere in the world. This was because most manufacturers in India use crystalline silicon technology.
3. As it turned out, imported thin-film modules were cheaper and there weren't enough domestically produced crystalline silicon modules in the Indian market, as a result of which most project developers sourced their equipment from overseas.
4. India will rest its case on the "government procurement" exception applicable to "procurement by governmental agencies for governmental purposes and not with a view to commercial resale…"
5. Is there some legal merit to this defence? Even if the subsidiary of the government-owned NTPC mandated to purchase power generated under the NSM is considered a government agency, it is highly debatable that this procurement is for "government purposes". Further, given that this solar power is sold to distribution companies and ultimately to private consumers, it is clearly intended precisely for the purposes of commercial resale.

Politics of Doha

The Beginning

Agriculture

1. Uruguay round required countries to taiffize their farm quotas but allowed special safeguard duties for some time to adjust to the change. But these 'temporary' duties became permanent. So in Doha the aim was to reform such duties - the controversy was how.
2. India and China were against lowering the duties. US insisted that its farmers be allowed to sell more produce DingCs. On subsidies US proposed to limit its trade distorting subsidies to $14.5 bio which was more than it actually spent last year, but less than it spent in four of the last seven years. EU too wanted to focus more on non agriculture than agriculture.

Singapore Issues

1. Before the Doha ministerial, negotiations had already been under way on trade in agriculture and trade in services which were required by the Uruguay round but US wanted to expand the talks and include the Singapore issues.

Scope of Doha / DDA

1. Agriculture: Many of the Uruguay commitments were to be implemented by 2000 but were not (implementation issues). So it aimed at reviewing these, improving market access, phasing out export subsidies and reductions in trade distorting domestic support.
2. NAMA: Singapore issue of trade facilitation and improving market access.
3. Services: Expanding the scope of GATS.
4. TRIPS: Expanding the scope of TRIPS.

Principles of DDA

1. Single undertaking: Every item of the negotiation is part of a whole and indivisible package and cannot be agreed separately.
2. Participation: The negotiations are open to all WTO members and to observer governments negotiating or intending to negotiate membership. But decisions on the outcomes are only taken by members.
3. Transparency: The negotiations have to be transparent.
4. Special and differential treatment: The negotiations have to take fully into account the principle of special and differential treatment for developing and least-developed countries.
5. Sustainable development.
6. Subjects not negotiated: Non trade issues like labor, environment etc.

Doha Issues
Agriculture

1. Cancun and July package: Developed countries' farm subsidies became a major sticking point. After the failure of Cancun, US proposed to drop Singapore issues (except trade facilitation) and to focus on market access and elimination of agricultural export subsidies. Negotiations began again and July package (2004) / Framework Agreement came out which provided following broad guidelines for concluding the negotiations of Doha - (a) Eliminated 3 Singapore issues, (b) Cut of agricultural export subsidies. Still in the Paris talks which followed France protested moves to cut subsidies to farmers, while the U.S., Australia, the EU, Brazil and India failed to agree on issues relating to chicken, beef and rice. Most of the sticking points then appeared to be small technical issues.
2. Hong Kong: At Hong Kong (2005) most members reached a deal that set a deadline for eliminating subsidies of agricultural exports by 2013. The final declaration also required DCs to open their markets to goods from the LDCs.
3. Geneva: It failed. The US and EU blamed India for the failure of the talks. India claimed that its position was supported by over 100 countries. Brazil broke away from the position held by India. The EU Commissioner for trade supported India's position (personally) saying the agriculture talks had been harmed by the five-year program of agricultural subsidies recently passed by the U.S. Congress.
4. 2008 crisis: Then 2008 crisis happened.
5. Net position: The US is being asked by the EU and DingCs to make a more generous cut in the trade distorting domestic support for agriculture. The US is insisting that the EU limit its number of import sensitive items and the DingCs cut the number of their special items and all make more substantial reductions in tariffs. Special products are exempt from both tariff cuts and subsidy reductions because of development, food security, or livelihood considerations.

Implementation issues

1. Developing countries claim that they have had problems with the implementation of the agreements reached in the earlier Uruguay Round because of limited capacity or lack of technical assistance. They also claim that they have not realized certain benefits that they expected from the Round, such as increased access for their textiles and apparel in developed-country markets. They seek a clarification of language relating to their interests in existing agreements.
2. Doha ministerial: It provided for resolution of such issues as per the mandate where provided and priority resolution by WTO bodies where no such mandate was provided.

G20, G33, G90 & G4

1. In Cancun, G20 emerged as a grouping of some developing and industrialized nations. Since its creation, the G20 has had fluctuating membership, but is spearheaded by the G4 (China, India, Brazil, and South Africa). G-20 favors reforming developed country agriculture.
2. G-33 supports granting developing countries greater agricultural market access flexibilities.
3. G-90 is a group of LDCs.

TRIPS

1. Cancun: Cancun (2003) delayed the implementation of patent system for LDCs until 2016. It allowed each member to grant compulsory licenses for pharmaceuticals and to determine what constitutes a national emergency.

S&D Treatment

1. Doha ministerial: It reaffirmed S&D treatment for DingCs to be present in all the agreements. The negotiations have been split on implementation. DingCs want to negotiate with shorter deadlines while DCs want to leave deadlines open (so as not to make any commitment sooner).
2. Hong Kong: It agreed to five S&D provisions for LDCs, including the duty-free and quota-free (DFQF) access.

DFQF

1. It means providing DFQF access to LDC goods to the DC markets for over 97% of tariff lines. If US alone were to implement the initiative, it would potentially increase LDCs exports by 10%.

Limitations of WTO

1. New challenges: Mattoo and Subramaniam argue that global talks should concentrate on fears over "security"—of food, energy, environment and income. They point out that there are strikingly few rules governing trade in oil. More broadly, the WTO is ill-equipped to deal with other potential flash points, from green tariffs to complaints about undervalued currencies or investment protectionism.
2. Little on table: US argues that not much was on offer in Geneva anyway: one study put the eventual benefits at maybe $70 billion, a drop in the ocean of the world's GDP. But this ignores the unpredictable dynamic benefits of more open markets.
3. Differing perceptions on India & China: US thinks India and China are getting richer and must pay now. In 2008 disagreement centered on developing countries' ability to respond to surges in agricultural imports. Now it appears that the real bone of contention is the aim of proposed cuts in tariffs on manufactured goods where US wants India and China to reduce more and bring them to a parity level with US.
4. Preference Erosion: Some African and Caribbean countries did not want to see the EU open its banana market to all and sundry, because that would erode the value of their privileges.

India's Position on Recent (2011) WTO Issues

1. Tariff Standstill: It means freezing custom duties @ current levels. This is to prevent a race back to protectionism. India opposes it as it amounts to developing countries ceding their policy space and being denied any recognition for their voluntary liberalization. Besides it would lead to developing countries taking commitments much beyond what was envisaged initially.
2. Export Restrictions: It means countries can't ban exports of agriculture commodities. India opposed it.
3. LDCs: Under DFTP, India unilaterally cut tariffs for imports from LDCs on a large number of items. India urged WTO members to follow suit. Under the Duty Free Tariff Preference Scheme (DFTP), 2011, India will provide preferential tariff to items which comprise of 92.5% of Least Developed Countries' exports. Cambodia, Rwanda, Madagascar, Uganda and Tanzania have been notified under the scheme.
4. Plurilateral Groupings: As Doha talks linger on, US and other developed countries favor forming small groupings and hammer out plurilateral agreements. India is opposed to this.

Public Procurement Deal / GPA

1. @Geneva (2011), 42 countries agreed on plurilateral public procurement deal. China and India are observers with China expected to join soon. The GPA covers $600 bio of contracts. It also seeks to bring into place enhanced transparency and rule based public procurement policy.
2. The negotiations were marred with difficulties, with long-standing disagreements between the EU, US, and Japan. While the EU and Japan wanted it to be open to all members of WTO, US wanted it to be restricted to only the GPA members. Finally US prevailed.
3. China maintained that it was not ready to abide by the rules of the old GPA, but instead insisted on a review of rules. The old rules, China feared, did not provide sufficient clarity on the type of entities and actions

covered. The new GPA is agreeable to China.

Early Harvest Issues vs Single Undertaking

1. G-20 and G-90 are in favor of single undertaking while EU and US are in favor of cherry picking and clinch agreement on 'early harvest' issues. But the difficulty will be to reach agreement on which issues should be prioritized if members adopt such a 'cherry-picking' approach.
2. LDC issues form the core of early harvest issues which include DFQF and cotton. US and Australia tried to make it LDC+ in which all the major players including Brazil, India and China will have to make significant concessions. India has said that though the early harvest of LDC issues was important, the remaining issues of the Doha development agenda should also be dealt with. USA is unwilling to commit in LDC core issues such as DFQF and cotton it has been seeking to shift the onus on Brazil, China and India.

Cotton

1. C-4 (a group of 4 west african cotton producer nations) wants a freeze on the cotton subsidies at their current, historically-low levels but no agreement was reached in 2011. US offered a package involving some technical help, enhancing DFQF market access to cotton as well but US is a net cotton exporter of cotton (and C-4 countries hardly export 2% of their exports to US) and these measures would do little to address the concerns expressed by C-4 who suffer more from US subsidies to its own cotton producers (which are the largest in the world) and hence want US to end the subsidy.

Friends of Fish

1. Friends of Fish group - Argentina, Australia, Chile, Colombia, Ecuador, New Zealand, Norway, Peru, and the US - reaffirmed @ Geneva, 2011 their continued commitment to seek strong new rules aimed at eliminating subsidies that contribute to fleet overcapacity, which in turn leads to overfishing and the depletion of stocks. Such subsidies are estimated at US$16 bio annually, with Japan, China, the EU, the US, and Russia topping the list.

Indian Agriculture & WTO (Mainly AoA)

1. Ten issues are namely Blue box support for US, Cotton, Sensitive Products / Non Sensitive Products beyond 100 percent duties, Tariff Simplifications, Tropical Products & Diversification Products and Preservation of Long Standing Preferences have been in square brackets or otherwise annotated in the modalities since December 2008.

Non Tariff Barriers in Agriculture Products

1. Starting from 2004, they were to be converted into tariffs and reduced by 36% in 6 years by DCs and 25% in 10 years by DingCs.

Tariffs on Agriculture Products

1. DCs had to reduce it by 36% in 6 years while DingCs by 24% in 10 years. But DCs already had very high tariff rates and despite the 36% reductions their tariffs would remain very high. Since the lowering requirement is not on weighted terms, they will just reduce tariffs on items they export and on the items they import they will reduce tariffs by the minimum required 15% only.
2. India had to bind its tariffs and it did it @ 100% for primary products, 150% for processed products and 300% for certain edible oils. These are ceilings and actual rates applied are much lower.

Country	**Green Box**	**Blue Box**	**Amber Box AMS**	**Total Subsidies**
EU	$20 bio (20%)	$23 bio (23%)	$57 bio (57%)	$100 bio
US	$51 bio (88%)		$7 bio (12%)	$58 bio
Japan	$23 bio (76%)		$6 bio (22%)	$30 bio

Green Box Subsidies

1. They are exempted from reductions. But they also form the highest portion of subsidies given by DCs to their farmers. USA gives ~ 33% of the agriculture GDP as green box subsidies, Japan gives 25%, EU gives 13% to its farmers. India gives only 2%. DCs have also resorted to vague definitions to transfer support from non exempt subsidies to the green box ones. In 2000, green box subsidies to total agriculture subsidies formed 20% for EU, 88% for US and 76% for Japan.

Amber Box Subsidies

1. DCs had to reduce AMS by 20% in 6 years while DingCs by 13% in 10 years. But they have not done it so far despite Amber box constituting just 12% in case of US and 22% in case of Japan of their total agriculture subsidies.
2. India's AMS was less than 10% (de minimis level specified by WTO for the amber box subsidies) so it had no commitment to reduce it. In fact India had negative AMS.
3. But once India's support under PDS system becomes higher than 10% it will be required to cut the subsidies risking food security. So India is also pressing for a food security box and a rural development needs box.

Export Subsidies

1. DCs had to reduce it by 36% in 6 years and DingCs by 24% in 10 years and subsidized export volume by 21% in 6 years and 14% in 10 years respectively. But already their subsidies are so high that despite the cut they will remain high.
2. India didn't have any export subsidy programmes back then but developing countries are allowed to use subsidies including reduction of cost of freight.

Reduction in Industrial Tariffs

1. Non agricultural tariff reduction at higher pace meant that the protection accorded to industry and hence the anti agriculture bias went away. This led to ToT turning favorable for agriculture. It improved from 89 in 1981-82 to 102 in 1991-92 and has since remained stable in 103 - 105 range. Favorable ToT also meant higher private investment which went up from 5.5% in early 80s to 16% in 2010-11.

Impact on Food Security

1. Specialization into crops where India has comparative advantage would mean sacrificing the notion of self sufficiency in all crops.
2. Increased volatility in food prices and hence increased volatility in farm incomes can be harmful. It will also make the country prone to dumping.
3. But increased export opportunities would benefit crops where India has advantage. At present these crops have negative protection due to restriction on imports. Currently exports are regulated and are supposed to be allowed in case of bumper production. In the last few years while India has somewhat liberalized exports, import structures have remained unchanged leading to distortions.

EU's Fish Regulations

1. EU has passed a regulation which would stop imports of fish from those countries which don't satisfy their criteria. But these criteria also require that all the fish catch in the exporting countries must be 'reported' to the respective authorities - something which is not done in India.

Impact on Environment

1. Increased globalization would encourage monoculture in the crops where India has comparative advantage. This may lead to ecological imbalance.

India's Specific Demands

1. Self designation of appropriate number of special products based on the criteria of food security, livelihood security and rural development needs as a part of S&D box.
2. A more effective SSM than the current one.

3. Substantial cuts (75 - 80%) by US and EU on their overall trade distorting support and resolution of the issue of product specific AMS caps.
4. Instead of 2 band tariff cut currently, there should be 4 band tariff cut with more flexibility for DingCs.

India & TRIPS

1. India had to amend Patent laws and introduce product patenting. But on the issue of plant varieties, a sui generis legislation was passed.
2. India has issued the first compulsory license against a German company Bayer for production of liver and kidney cancer drug Nexavar to a local company. The cost is reduced from Rs. 175,000 to Rs. 8,800. The drug is used to enhance the life of patients in advanced stage. Instead of 'reasonable pricing' Indian Patent Act had a provision of 'reasonable affordable pricing'. It also allows for a compulsory license to be awarded after 3 years of a patent.

Anti Counterfeiting Trade Agreement

1. It is a plurilateral agreement of 10 countries which seek to tighten IPR enforcement mechanisms over and above TRIPS. EU, Canada say that they considered counterfeiting to be one of the most serious problems. Counterfeit medicines not only cause economy loss but also put the lives of patients at risk as they could be dangerously sub-standard. ACTA will legitimize acts such as EU stopping Indian drugs meant for 3rd countries @ its ports.
2. India, Brazil and China argue that infringing intellectual property rights should not be confused with sub-standard products and the issue of fake drugs is not a WTO issue. They assert that DCs want to paint all generics as counterfeit.

India & SPS

1. It has been argued that the SPS agreement has been used by the developed countries to selectively ward off imports from developing nations. for instance, EU's regulation on fish products and ban on the use of pesticides in production of mangoes, bananas etc has affected Indian agricultural exports.

India & GATS

1. India's expertise is in mode IV and trade in these services has not been opened under GATS. The comparative advantage in mode III services lies with developed countries and their opening up has harmed India.
2. Several countries have requested India to open up areas like retail, higher education, legal services etc. India is taking a quid pro quo approach in these negotiations.
3. India also endorsed plurilateral negotiations in services after the 2005 ministerial conference.

India & SCM
Textiles Sector

1. India will have to eliminate export subsidies to the textile industry under the Subsidies and Countervailing Measures Agreement of WTO. The agreement allows developing countries to give subsidies as long as the exports from that particular sector constitute less than 3.25 percent of world trade. India’s share has been higher than 3.25 percent in world textiles trade for five years and hence, the country needs to remove the subsidies given to the textiles sector by 2015, as the WTO agreement provides eight-year time period to do so.
2. As per SCM, any concession/facility that is available to exporters, but is not available to suppliers of the same product to the domestic market, can be interpreted as an export subsidy. Any facility/concession that stipulates export as an eligibility criterion is also an export subsidy. Hence, SEZ, EOUs, EPCG licenses, Focus schemes, interest subvention on export credit, advance licenses, etc. also come under the definition of export subsidies.

Subsidy Notification

1. The Agreement mandates countries to notify their subsidy programmes to WTO. Under it US called on India to notify some subsidy programmes not already notified. India said many of its programmes listed by the US are not prohibited by the Subsidies Agreement.

India & IT Agreement

India has ruled out joining negotiations to expand a US-backed trade pact that could pave the way for consumer products such as cellphones, tablets and flat-panel TVs to be traded duty-free among member countries.

The refusal by Asia's third-largest economy to budge despite strong lobbying by the US comes amid a visit by Vice-President Joe Biden for strategic trade talks between the countries. India's pushback also comes a week after the US blamed China for the breakdown of talks to expand the 1996 Information Technology Agreement backed by the US and European Union that could cover international trade worth about $800 billion, or Rs 48 lakh crore.

"We are not in favour of joining ITA-II. . India's demand for electronic goods is forecast at $400 billion (Rs 24 lakh crore) by 2020, by when it would be the single-largest item on the import bill

The ITA has played a pivotal role in building India's IT-enabled services industry by providing access to myriad innovative and affordable ICT equipment through tariff elimination

The government was seen as buckling under pressure from the US when, earlier this month, India said it has suspended implementation of the so-called Preferential Market Access policy, which was perceived as a thorn in the flesh by US technology companies.

The policy would have made it mandatory for government agencies to procure telecom equipment from domestic manufacturers, placing MNCs at a disadvantage unless they had local manufacturing facilities. Industry body US-India Business Council declined to comment on the issue.

India and TBT

1. EU has changed the rules for importing APIs for medicinal products and has made mandatory the current good manufacturing practices (cGMP) certificate from the local authority for all bulk drugs exports. Such a move will affect Indian API exports to EU in the form of generics. China’s share in EU’s API imports is 12% while India commands 2% share.

Q. What are India's gains under WTO regime with respect to
(a) Service sector (2011, I, 20)
(b) Globe-Hex model (2011, I, 20)

Q. Discuss the impact of WTO on Indian agriculture. (2007, II, 60)

WTO Agreements

Q. Write on the unfinished agenda of Doha round of negotiations of WTO. (2011, II, 15)

Q. Describe the structure of WTO with reference to 5 main agreements. (2010, I, 30)

Q. Discuss some controversial issues before the WTO. Do you think the rigid and partial attitude of industrialized countries is the main hurdle in the way of reaching some solution? (2006, I, 60)

Safeguard Mechanism

1. It is a temporary action taken to protect a domestic industry from a surge in imports causing material harm to the industry.

Anti Dumping Agreement

1. If a company exports a product at a price lower than the price it normally charges on its own home market, it is said to be “dumping” the product. The agreement allows governments to act against dumping where there is genuine (“material”) injury to the competing domestic industry (dumping > 2% of price, volume > 3% of total imports or 7% of combined imports of complaining countries).

2. In order to do that the government has to be able to show that dumping is taking place, calculate the extent of dumping (how much lower the export price is compared to the exporter's home market price), and show that the dumping is causing injury or threatening to do so.
3. Dumping vs CVD: Dumping is an action by a company. CVD is applied against subsidies provided by the exporting government - domestic or export.

Information Technology Agreement

1. It is a plurilateral agreement signed in 1996 among 28 countries which eliminated duties on chips, semi-conductors, computers, IT products etc. Since then such trade has grown to $4 trillion now.
2. US is seeking to extend this agreement to cover more products which have come into existence since 1996. The membership includes 73 countries now including India and is expected to be beneficial.

Generalized System of Preferences

1. It is the exception to the non-discriminating rule of WTO. It is used for preferential access to LDCs.

Agreement on Subsidies and Countervailing Measures (SCM)

1. It defines two basic categories of subsidies--"prohibited" and "actionable". The former prohibits all local content subsidies which favor the use of domestic over imported goods. The latter, though not prohibited, can be challenged either through multilateral dispute settlement or through countervailing duties if the imports cause "serious prejudice to the interests of another member".
2. But a subsidy is "actionable" under the context of SCM only if it is "specific" to an enterprise or industry or group of enterprises or industries. Alternatively, a subsidy which is "widely available within an economy" is excluded from SCM. This means that "subsidies" are restricted to grants, loans, equity infusions, loan guarantees, fiscal incentives, the provision of goods or services, and the purchase of goods. They do not include any indirect and trade-distorting structural subsidy by way of "revenues forgone"--lower (than cost recovery) utility tariffs, low land prices, repressed labour market, artificially cheap capital and so on--which are universal in nature.

Prohibited subsidies

1. Two categories of subsidies are prohibited the SCM Agreement. The first category consists of subsidies contingent, in law or in fact, whether wholly or as one of several conditions, on export performance ("export subsidies"). The second category consists of subsidies contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods ("local content subsidies").
2. SCM provides for the creation of a rapid (three-month) dispute settlement mechanism for complaints regarding prohibited subsidies.

TRIPS

1. It was negotiated in Uruguay round and was a result of intense lobbying by USA supported by other developed nations. Prior to the TRIPS, IPRs concerning trade was governed by the Paris Convention 1863. Under this convention, IPRs included patents, trademarks and industrial designs. But the convention was fairly liberal and the national governments had right to decide the subject matter of patents and duration of production.

2. 2 important aspects of the TRIPs were as follows - (a) product patents, and (b) the scope of IPRs was widened to cover patents, copyrights and related rights, geographic information (GI), industrial designs, layout design of ICs, and trade secrets.

Q. "The TRIPS agreement runs counter to the neoliberal argument in favor of competition." Is this a fair assessment? Discuss. (2009, II, 20)

Agreement on Agriculture (AoA)

1. Classification of Subsidies: Domestic and export subsidies. Domestic subsidies further divided into trade distorting and non trade distorting. There are green, amber and blue subsidies.
2. Green Box: Non trade distorting or minimal trade distorting subsidies are in green box and are excluded from regulations. These are mainly payments to producers for environmental programmes so long as it doesn't affect current production (only creates future capacity), training, marketing information, infrastructure etc.
3. Amber Box: Trade distorting domestic subsidies are in amber box. It is stated as Aggregate Measurement of

Support (AMS) and includes all specific support + non specific support. Specific support is the difference between domestic procurement prices and international prices. Non specific support covers all input subsidies. AMS has to be reduced by 20% for developed countries over a period of 6 years while developing countries were required to reduce total AMS by 13% over a period of 10 years.

4. De-Minimus Level of Subsidy: Policies with AMS less than 5% of value of agricultural production for developed countries and less than 10% of value of agricultural production for developing countries are exempted from reduction commitments. India is exempted.
5. Blue Box: It is an exemption from the subsidy reduction rule but it has an upper limit. The main aim is to sustain cheap imports needed by trans-national agriculture businesses.
6. Special and Differential (S&D) Box: These are measures taken by DingCs which can be provided but were otherwise prohibited like investment subsidies, input subsidies etc.
7. Export subsidies: The developed countries were required to reduce the volume of subsidized exports by 21% over 6 years and corresponding target for developing countries was 10% over 10 years. Total export subsidies were to be cut by 36% in 6 years by DCs and 24% in 10 years by DingCs.
8. NTTBs: To first convert them into tariffs and then to reduce. The developed countries were required to reduce by 36% over 6 years and corresponding reduction target for developing countries was 24% over 10 years.

Current Proposals

1. Developing countries can announce a list of items on which no / lower duty cuts.
2. Special safeguard mechanism will allow them to impose additional safeguard duties in the event of a surge on import volumes or fall in import prices.

GATS
It divides all tradable services into 4 modes of supply.

1. Mode 1: It includes services which can be provided across the border without the provider or consumer crossing borders. For example, financial trading, BPO etc. These are not covered in GATS.
2. Mode 2: It includes services for which consumers have to travel abroad. For example, education, tourism.
3. Mode 3: It includes services where commercial presence of service provider in the foreign country is essential. For example, banking, insurance, telecom etc.
4. Mode 4: It includes services that require physical presence of a natural person in the foreign country. For example, skilled professionals like engineers doctors etc. These are not covered in GATS.

Q. What are the 4 modes of GATS? What mode has been preferred by India and why? (2010, II, 15)

TRIMS
An agreement was reached regarding cross-border investments for not applying following provisions:

1. Local content requirement: To use local inputs by foreign investors.
2. Trade balancing requirement: To produce for exports as a pre-condition to obtain imported goods as inputs.
3. Foreign exchange requirement: To balance foreign exchange outgo on importing inputs with foreign exchange earnings.
4. Export restriction: To restrict the export of more than a specified proportion of local production.

Agreement on Application of Sanitary and Phyto-Sanitary Measures (SPS)

1. Member states can frame policies relating to safety standards of food which may lead to restriction of trade.
2. Standards should confirm to international standards as far as possible. If higher standards are adopted then there should be a scientific backing and proper risk assessment.

Agreement on Technical Barriers to Trade

1. It prohibits technical requirements created solely for the purpose of limiting trade. It allows such requirements for legitimate purposes like consumer and environment protection.

WTO Ministerial Conferences

Singapore (1996)
It revolved around 4 Singapore issues on which the developed countries wanted to make negotiations.

1. Investment: It is an extension of TRIMS. Foreign investors should be able to enter member countries with minimal restrictions. It is based on extension of the principle of national treatment.
2. Competition policy: It should encourage competition and not discriminate against foreign companies. It is based on the principle of national treatment.
3. Government procurement: It is based on extension of the principle of national treatment.
4. Trade facilitation: The rules and procedures related to trade facilitation should be similar across all member countries.

Trade Facilitation - Singapore Issue

1. Customs procedure paperwork amounts to 10 percent of the value of any trade transaction. Estimates are that it will increase world trade by $900 bio.
2. One group asserts that the reduced customs and transaction costs would help LDCs while common sense tells us that DCs will benefit more as it is LDCs which have more archaic trade procedures which impact both their importers as well as exporters plus the DC exporters.

Doha (2001)
Agreement on Agriculture

1. It called for implementation of AoA.
2. US is being asked by the EU and developing countries to significantly reduce domestic support for agriculture. US is insisting that EU and developing countries should further reduce tariffs and limit the no. of import sensitive products and special products that would be exempt from tariff cuts.
3. Special products are agriculture products of particular importance to farming communities in developing countries for reasons of food security, rural development etc.

GATS

1. The declaration called for starting negotiations under GATS.

Non-Agriculture Market Access (NAMA)

1. It refers to all those products that are not covered by the AoA or GATS constituting bulk of world's merchandise exports.
2. Doha called for reduction in tariff and non-tariff barriers on these products by May 2003 but this deadline was missed.

Developmental Issues

1. Implementation issue: It relates to implementation of agreements reached in Uruguay. Developing countries claim that they have problems with implementation of above agreements because of limited capacity or lack of technical assistance.
2. TRIPS and public health: It involves the balance of interests between the pharmaceutical companies that hold patents and the public health needs in developing countries. It allowed those countries who can't manufacture medicines to issue compulsory licenses for imports. It also allows a member country to export pharmaceutical products, made under compulsory licenses to the LDCs.
3. Special and Differential Treatment: While Doha Declaration reaffirmed S&D treatment for developing countries, there remained a conflict between developing and developed countries on how these provisions would be put into practice. While developing countries wanted to negotiate on these provisions with shorter deadlines, the developed countries wanted to study these provisions with open deadlines.

Cancun (2003)
Agreement on Agriculture

1. US and EU united to refuse any reduction commitments in domestic and export subsidies.

NAMA

1. They also proposed a 'blended formula' for cutting NAMA tariffs under which the developing countries would have to face deeper tariff cuts in more products.

July Package, 2004

1. It was a set of non-binding framework agreements signed by member nations.
2. 3 out of 4 Singapore Issues were dropped. Only Trade Facilitation was left.
3. Developed countries agreed to reduce their heavy farm subsidies.
4. But the text was vague without deadlines. Further, above commitments were conditional upon opening of developing countries' markets for NAMA goods.

Hong Kong (2005)
Agreement on Agriculture

1. The export subsidies were targeted to be completely phased out by 2013. However, no specific commitment was made in relation to reducing domestic support. For cotton export subsidies will be eliminated by 2006.
2. Specific Safeguard Mechanism (SSM) was introduced where the developing countries will have the option of temporarily imposing higher tariff rate on the import of an agriculture product, if there is either a surge in import volume or a sharp dip in its import price. But exact mechanism of its implementation was not specified and India and US fought over it.

NAMA

1. Tariff on NAMA products has been proposed to be brought down according to the Swiss Formula. (it was proposed by Switzerland and implies deeper cuts on higher tariffs and milder on lower tariffs. Developing countries have kept their non-agriculture tariffs at high levels after the removal of quantitative restriction.)

Q. "The ministerial declaration adopted at Hong Kong addressed some of the concerns of developing countries related to agriculture."
Comment upon the statement. What were the time frames and targets in specific areas decided in the declaration? (2007, I, 20)
Geneva (2011)
Agreement on Agriculture

1. India is opposing West move to expand the agenda to include food exports and security, energy, competition and investment.

Free Trade Agreements
FTAs vs WTO: Which one is better?
(a) FTA

1. Principal of Freer Trade: The world trade overall is no worse off than before signing FTA. FTA reduces tariff, so even if the imports from less efficient country gain at the cost of more efficient country, the rise in imports from less efficient country will more than offset the drop in imports from more efficient country.
2. Easier: They are customized, easy to negotiate things. A small group of countries can sign FTAs easily and independently of WTO. This also helps as a policy tool, to lock-in trade policy reforms and reduce the chances of reversal by successive governments. FTAs can have politico-strategic motives as well.

(b) WTO

1. Principal of Non-Discrimination: It is the best option because it is non-discriminatory in character. Market access is granted to all member countries. FTAs on the other hand stand to reduce imports from more efficient non-member countries to less efficient member countries.

Plurilateral vs Multilateral

1. Juggernaut effect: A trade deal, even a discriminatory one, should enlarge a country's export sector and shrink domestic industries vulnerable to foreign competition. This will, in turn, change the country's politics, strengthening the body which demands open markets overseas, and weakening the country's protectionist constituencies. If the export lobby gets its way, freer trade will follow.

2. Bhagwati: He calls them "termites in the trading system". He argues that regional deals make countries less likely to agree to global tariff cuts, since freer global trade would erode the narrow gains they have won.
3. It has been observed that, in recent years, the private sector both in developed and developing countries has shown greater preference for Free Trade Agreements. This is perhaps one of the key factors why WTO members are struggling to amass political capital critical to conclude the Doha deal.
4. WTO classification of FTAs: The tariff elimination criteria reflected in GATT for FTA compliance is that FTAs must eliminate tariffs on at least 85% of tariff lines within ten years. The criteria for services liberalization relies on the coverage of sectors included in the GATS. FTAs that covered five key sectors of the GATS are considered comprehensive. Those with less than five sectors were categorized as partial, and those without any coverage as "no provision". FTAs that covered three or four Singapore issues were regarded as comprehensive, and the remainder as partial or no provision.
5. India - China FTAs: Before 2000, the sole FTA involving China and India was the Asia-Pacific Trade Agreement. By 2012 China had 12 FTAs and India had 13. China is in talks with Japan and Korea on a trilateral FTA, which some see as a rival to the US-led Trans-Pacific Partnership (TPP) process. Of the combined 25 FTAs in effect, 13 have a relatively fast approach to tariff liberalization, four comprehensively cover services, and three comprehensively cover the Singapore issues. The recent FTAs show more depth than earlier agreements like China-Costa Rica FTA, 2011, India-Korea CEPA, 2011 and Japan-India CEPA, 2011. Many of India's early agreements typically placed little emphasis on services though the newer agreements have sought to rectify this issue. There is selective coverage of the Singapore issues in the FTAs, indicating a cautious approach to new trade issues. Meanwhile, the newer India-Korea CEPA and the Japan-India CEPA comprehensively covers three Singapore issues.

Trends in International Trade

1. Increasing share of developing countries: In 1995, when the WTO was created, developing countries represented less than 30% of the demand for imports of goods while developed economies absorbed almost 70%. Today, demand from developing economies is 43% of world trade, while developed economies is 57% (20% is intra-EU).
2. Slower growth in developed countries' trade: While demand for imports from Europe grew by less than 3% in volume last year, the CIS grew by 17%, followed by Latam at 10% and Asia at 6%. WTO forecasts for 2012 and 2013 do not modify this picture: imports from developed economies will grow by less than 2 per cent in volume, while developing and CIS countries' imports will triple this number and increase by 6 per cent.
3. Increasing integration of supply chains: This leaves the gross trade figures misleading and hence we should look at net value added figures. When measured in value-added, China's trade surplus with the United States is 40% less than the gross figures. WTO has launched World Input Output Database (WIOD) project for value added statistics. Value added approach will also help reduce the protectionist measures.

International Monetary System

Created: 4/6/2012 12:40 PM

Collapse of Bretton Woods

1. Before Bretton Woods gold was accepted as international currency. In Bretton Woods, USD assumed this role (1 ounce of gold = $35) because of 3 reasons - (a) Post WW2 US was the strongest economy. (b) US had accumulated a large stock of gold. (c) US dominated world trade.
2. But US started to run large and persistent fiscal deficit and hence CAD. This meant a pressure on $, other countries began to hold large reserves of $ and it led to the collapse of Bretton Woods.

Reserve Currency
Attributes

1. Positive externalities of low transaction costs: The more a currency is used, the lower transaction costs will be. Thus using a currency generates positive externalities and an incumbent is difficult to displace. Supply curve of the currency should be horizontal for every investor.
2. Investor confidence: Users should have confidence in the currency as store in value + transaction purposes. For this price stability has to be maintained, fiscal deficit in check. Supply curve of the currency should be horizontal for every investor. Macroeconomic and institutional credibility should be there.
3. International Demand: Trade driven demand as well as capital driven demand should be high. Currency should have wide share in world trade, finance. @ the end of WW2, $ had 60% world GDP and gold reserves.
4. Deep and liquid financial and fx markets: Enhance confidence by lowering transaction costs, enhancing investor confidence, giving horizontal supply curve, providing store of value. Full convertibility is needed.

Benefits

1. Lower borrowing costs: As international investors park their surplus in your currency.
2. Lower hedging costs: Companies face lesser fx risk. So costs are less.
3. CAD: Ability to run structural CADs for a longer time.

Costs

1. It requires the country to subordinate fiscal and monetary policies to maintain exchange rate stability.

Can SDRs be used as Reserve Currency?
(a) Yes

1. $ Argument: $ is growing weak.
2. International Demand Argument: A reserve currency should have international demand as a store of value as well as payment for transactions. SDRs can fulfill both roles easily.

(b) No

1. Euro Argument: Euro experience has shown that a currency can be strong only so long there is fiscal, monetary union plus a political will. There is no fiscal union @ global level and much less the political will.
2. IMF Quota Argument: Member countries' share of SDR is based on quota system which is widely perceived to be flawed.

Triffin Dilemma

1. In order to become a reserve currency, its supply to others needs to be increased which is possible via CAD. But a reserve currency needs to have a CAS in order to be appealing.

Petrodollars
Statistics

1. Oil exporting countries are expected to run a current account surplus of $750 bio (source: IMF) while China's surplus will decline to $180 bio. Since 2000 the cumulative surplus of oil exporting countries is $4 trillion compared to China's $2 trillion. For every dollar of oil import, US gets back only 34¢ as exports and EU gets 80¢ and China gets 64¢.
2. CAS of oil surplus countries doesn't go into official reserves. Rather it goes into their sovereign wealth funds which are opaque. They invest into UST via London intermediaries and also in energy, equity, real estate and hence difficult to track.

Imbalance

1. Oil exporting countries run large surpluses in the time of boom so as to cover for the deficits in times of oil price fall. When they don't increase government spending their imports tend to be low (as private manufacturing sector is tiny in these countries) and they tend to run huge surpluses. This causes global imbalance. S Arabia is running 26% CAS, Qatar is running 45% CAS.

2. Exchange rates have little impact on their exports since oil production costs are mainly in $ and exports are denominated in $ and this $ is not reinvested into the economy. It is held as $ or used to pay for imports in the oil sector itself (private manufacturing is tiny). So there is a need to increase public spending.

IMF

The main source of IMF resources is supposed to be IMF quota contributions, the money countries pay into the Fund for their membership of the institution. The quota is used in three ways: to determine voting rights, to determine contributions, and to set a guideline for the level of resources a country can borrow. As of 2008, the total IMF quota for all countries was $366 billion. In 2010 it was agreed to double the size of the IMF quota to $732 billion, but this will not come into force until IMF members with 85 per cent of voting rights approve the change, which is expected by the end of 2012 (see Update 73). Normally IMF members contribute one-quarter of their quota in the form of widely accepted foreign currencies such as the dollar, euro, yen or pound sterling. The remaining three-quarters are committed to the Fund in the country's own currency, though only paid in when the Fund demands the resources.

Aside from the quota, the IMF has standing arrangements to bilaterally borrow money from its members. Contributions through these arrangements do not affect IMF voting rights. The most important of these is the New Arrangements to Borrow (NAB), which is designed as a "backstop to the Fund's quota-based financing mechanism", and which is "only to be used when supplementary resources to quota resources are required". The NAB was first agreed in 1997 between the IMF and 25 high-income IMF member countries. In 2009, in response to the financial crisis, it was expanded from the 26 countries participating at the time, who had pledged about $52 billion, to take in 13 new countries, including large middle-income countries, with a total commitment of $568 billion

2010 Quota Reforms / 14th General Reforms

1. The reforms have been approved by board of governors of IMF. It includes an amendment to the Articles of Agreement so further needs acceptance by 60% of the members having 85 percent of the total voting power.
2. These reforms follow up on 2008 reforms which made ad hoc quota increases for 54 member countries and tripled basic votes (and brought it to 5.5% of total votes). Currently The largest member of the IMF is the United States, with a current quota of SDR 42.1 bio out of total SDR 238 bio. It was planned that these reforms would be implemented by 2013 and discussion on 15th round of reforms would begin from 2014.
3. 2010 reforms provides for 100% increase in total quotas from SDR 238 bio to SDR 477 bio .
4. Shift 6% quota from over-represented to under-represented member countries. China will become the 3rd largest member country in the IMF, and there will be four EMDCs (Brazil, China, India, and Russia) among the 10 largest shareholders.
5. Preserve the quota and voting share of the poorest member countries whose per capita income fell below US$1,135 in 2008.

Quota Formula

1. $\text{Quota} = (50\%*Y + 30\%*O + 15\%*V + 5\%*R)_k$
2. Where CQS = calculated quota share.
3. Y = a blend of GDP converted at market rates and PPP exchange rates averaged over a three year period. The weights of market-based and PPP GDP are 0.60 and 0.40, respectively.
4. O = the annual average of the sum of current payments and current receipts or openness (goods, services, income, and transfers) over 5 years.
5. V = variability of current receipts and net capital flows.
6. R = twelve month average over a year of official reserves.
7. k = a compression factor of 0.95.

Importance of Quota

1. Subscriptions (quota share): A member's quota subscription determines the maximum amount of financial resources the member is obliged to provide to the IMF. A member must pay its subscription in full: up to 25% must be paid in SDRs or widely accepted currencies, while the rest is paid in the member's own currency.

2. Voting power (voting share): The quota largely determines a member's voting power in IMF decisions. Each IMF member's votes are comprised of basic votes plus one additional vote for each SDR 100,000 of quota.
3. Access to financing: The amount of financing a member can obtain from the IMF (its access limit) is based on its quota. For example, under Stand-By and Extended Arrangements, a member can borrow up to 2x of its quota annually and 6x.

he entire resource increase is being accomplished through bilateral loan agreements and not through the IMF's standing funding mechanisms, such as the paid-in quota or the New Arrangement to Borrow (NAB). This is partly because the US is unwilling to participate in the resource increase and partly because both the US and Europe don't want new contributions to affect their outsized voting rights in the Fund.

However, the BRICS have not made new contributions without conditions, as their joint statement said: "these resources will be called upon only after existing resources, including the [NAB], are substantially utilised" and the money was provided "in anticipation that all the reforms agreed upon in 2010 will be fully implemented in a timely manner, including a comprehensive reform of voting power and reform of quota shares." The contributions – unlikely to be ever drawn upon, as the IMF would first have to lend out both its entire existing war chest of $380 billion and a pending quota increase – are merely another enticement and reminder that the BRICS have money and are demanding change.

Alternative institutions

We should put the not-so-new money in context as well. As pointed out on this blog by Ilene Grabel, the May meeting of the ASEAN+3 group in Asia announced the doubling of a regional reserve pooling arrangement. That means China committed more than $38 billion in new money to the Chiang Mai Initiative, roughly on par with the IMF increase.

In the same Los Cabos announcement from the BRICS, we also learned that their leaders had "discussed swap arrangements among national currencies as well as reserve pooling". The idea is that the BRICS would set up their own emerging market monetary fund to cushion each other against shocks in the global economy. Of course this is only an idea at this stage, and a long way from fruition. The BRICS finance ministers were instructed to study the swaps and reserve pooling ideas and report back to the next BRICS leaders' summit in 2013. This study will coincide with the idea that the BRICS might set up their own development bank as well.

All in all it shows that the emerging powers are not taking for granted a world in which the IMF is at the centre of global economic governance. They are hedging their bets, waiting to see whether the traditionally Western-dominated institutions can be moulded in their own interests, and looking for some institutional plurality. At the very least it is good that the BRICS demand much deeper changes in IMF governance and policy, and that they use their vast resources to achieve it.

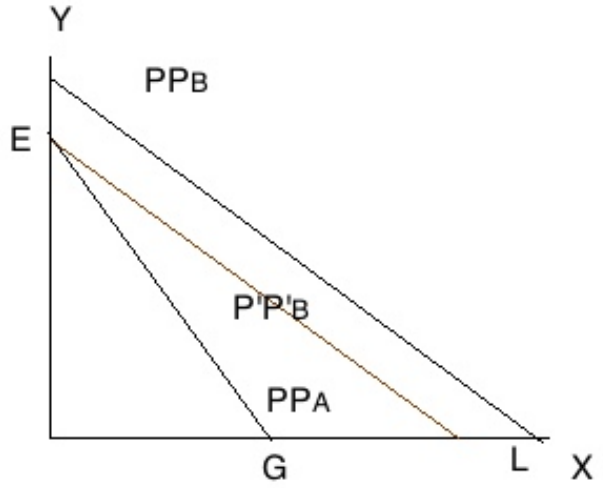
International Economics

Created: 5/22/2012 9:22 PM

International Trade
Comparative Advantage
Ricardo's Theory
(a) Assumptions

1. Similarity of tastes in both countries.
2. Labor value of costs: Labor is the only factor of production and all units of labor are homogenous. Prices of each commodity is determined by labor cost.
3. Classical assumptions: Constant returns to scale and full employment. Relative prices of the commodities in each country will be same post trade.
4. Free commodity trade and zero friction costs.
5. Static state: Supply of labor and technology both unchanged.
6. Mobility: Free intra-country mobility of labor but zero inter-country mobility.

(b) Model



1. Let the PPF of country A be PP_A and that of country B be PP_B. Clearly country B has absolute advantage in both the commodities X and Y. But a parallel projection (P'P'B) of its PPF shows it has a comparative advantage in the production of commodity X. So trade will happen.
2. After the trade $(P_x/P_y)_A = (P_x/P_y)_B = (P_x/P_y)_{world}$. But in A if $(MC_X/MC_Y)_A > (P_x/P_y)_A$ then it makes sense for producers of X to shift resources from X to Y to increase their profit. Due to constant returns to scale assumption, this shifting will continue until there are no more resources left in X and A specializes fully in Y. Since B has a comparative advantage in producing X, the cost of producing X in B < opportunity cost of not producing X in A.

(c) Criticism

1. Unrealistic assumption on labor costs i.e. labor is the only factor of production and all prices are determined by labor costs.
2. Full employment and CRS assumptions.
3. Tastes can be different in both economies.
4. Indeterminate theory: It doesn't explain how the gains from trade are distributed between both countries.
5. It is a static theory.

(d) Applicability to developing countries

1. Full employment assumption: Unrealistic in developing countries as resources lie idle. This leads to zero opportunity costs for those resources and trade brings little advantage.
2. Mobility of factors.
3. Doesn't allow for substitutability of factors i.e. labor can be substituted for capital.
4. Technology is constantly changing and so are tastes and preferences.
5. Imperfect markets: Perfect competition doesn't prevail, state intervention is there and factors of production may be owned by MNCs which means gains to trade flow to MNCs and not to the country.

Introduction of Money and Ricardian Theory

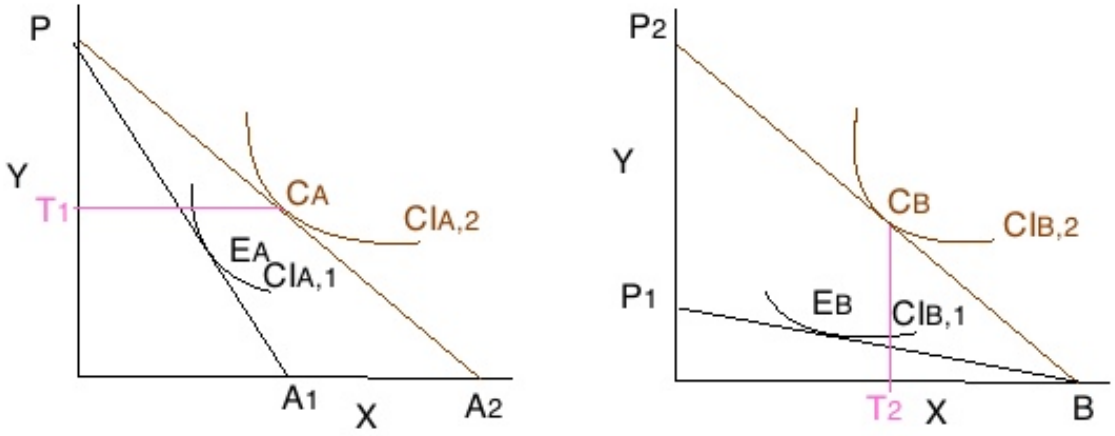
Cost	X	Y
A	2	2
B	1	0.5

1. The values in the cells are the costs of producing the commodity in the country. Clearly B has a comparative advantage in Y and A has in X even though B has absolute advantage in both X and Y.
2. Let B forgo 1 unit of X and with the resources released ($1), produce 2 units of Y. These 2 units of Y can be sold to Y and as a result it will release resources from production of Y and produce 2 additional units of X. Thus there is a net surplus of 1 unit of X and gains from trade exist.
3. Now so long as Y is supplied cheaper to A than the cost of X, B can sell Y to A. Similarly if A can sell X to B at a price < twice the price of Y in B, trade will happen.

Harberler's Theory of Opportunity Costs
(a) Assumptions

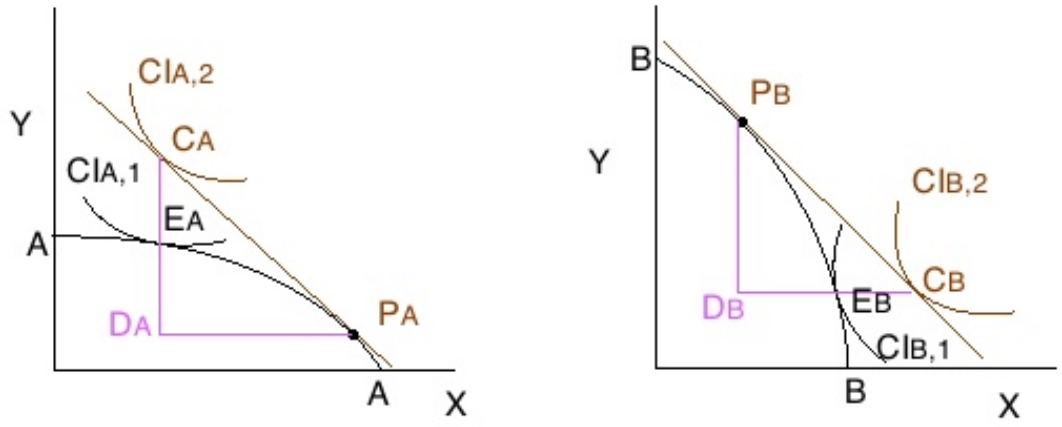
1. Similarity of tastes in both countries.
2. Classical assumptions: Perfect competition in all markets and full employment.
3. Free commodity trade and zero friction costs.
4. Static state: Supply of labor and technology both unchanged.
5. Mobility: Free intra-country mobility of labor but zero inter-country mobility.

(b) Constant Cost Model



1. Pre trade: Let PA_1 be the production possibility curve of country A and P_1B be that of country B. Country 1 is in equilibrium @ E_A where $CI_{A,1}$ is its community indifference curve (of consumption). Similarly country B is in equilibrium @ E_B where $CI_{B,1}$ is its community indifference curve. Comparing the PPF curves, clearly country A has comparative advantage in commodity Y and country B has comparative advantage in commodity X.
2. Post trade: So country A will fully specialize in producing Y and will produce @ P. Country B will specialize in producing X and will produce @ B. Now post trade, the prevailing price lines has to be same in both the countries. Let the new price lines be PA_2 in country A and P_2B in country B. Let the new community indifference curves be $CI_{A,2}$ and $CI_{B,2}$ in country A and B respectively. New equilibriums are @ C_A in A and C_B in B. Thus country A produces OP amount of Y but fives PT_1 to B in exchange for T_1C_A of X. Similarly country B produces OB amount of X but gives T_2B of X to A in exchange of T_2C_B of Y.
3. Terms of trade: Thus terms of trade for A are PT_1 of Y/T_1C_A of X and terms of trade for B are opposite (T_1C_A = T_2B and PT_1 = T_2C_B).
4. Gains from trade: They are measured for each country when it moves from a lower community indifference curve to a higher one as a result of only trade.

(c) Increasing Cost Model



1. Pre trade: Let AA be the PPF of A and BB be the PPF of B. Let autarky equilibriums be @ E_A and E_B respectively with community indifference curves (of consumption) being $CI_{A,1}$ and $CI_{B,1}$. From the PPFs it can be seen that A has comparative advantage in production of X while B has comparative advantage in production of Y.
2. Post trade: A will tend to produce more of X and B will tend to produce more of Y. But neither A nor B will specialize only in production of X and Y respectively. This is because as the costs increase with additional production, at some point in time, the marginal cost of X will increase relative to marginal cost of Y and @ point P_A they become equal to the relative prices of the products in the world i.e. $(MC_X/MC_Y)_A = (P_x/P_y)_{world}$. Similarly B will produce @ P_B where $(MC_X/MC_Y)_B = (P_x/P_y)_{world}$. Now A will export D_AP_A of X to B and import D_AC_A of Y and similarly B will export D_BP_B of Y (=D_AC_A)and import D_BC_B of X (= D_AP_A).

(d) Decreasing Cost Model

1. Here economies of scale will lead to incentives for A and B to specialize completely in production of X and Y respectively.

(e) Advantages

1. It does away with labor theory of value.
2. It is not based only on CRS assumption.
3. It highlights the importance of factor substitution in the trade theory.
4. It presents a simplified version of general equilibrium model of international trade.

(f) Limitations

1. Mostly same as that apply to Ricardian theory.

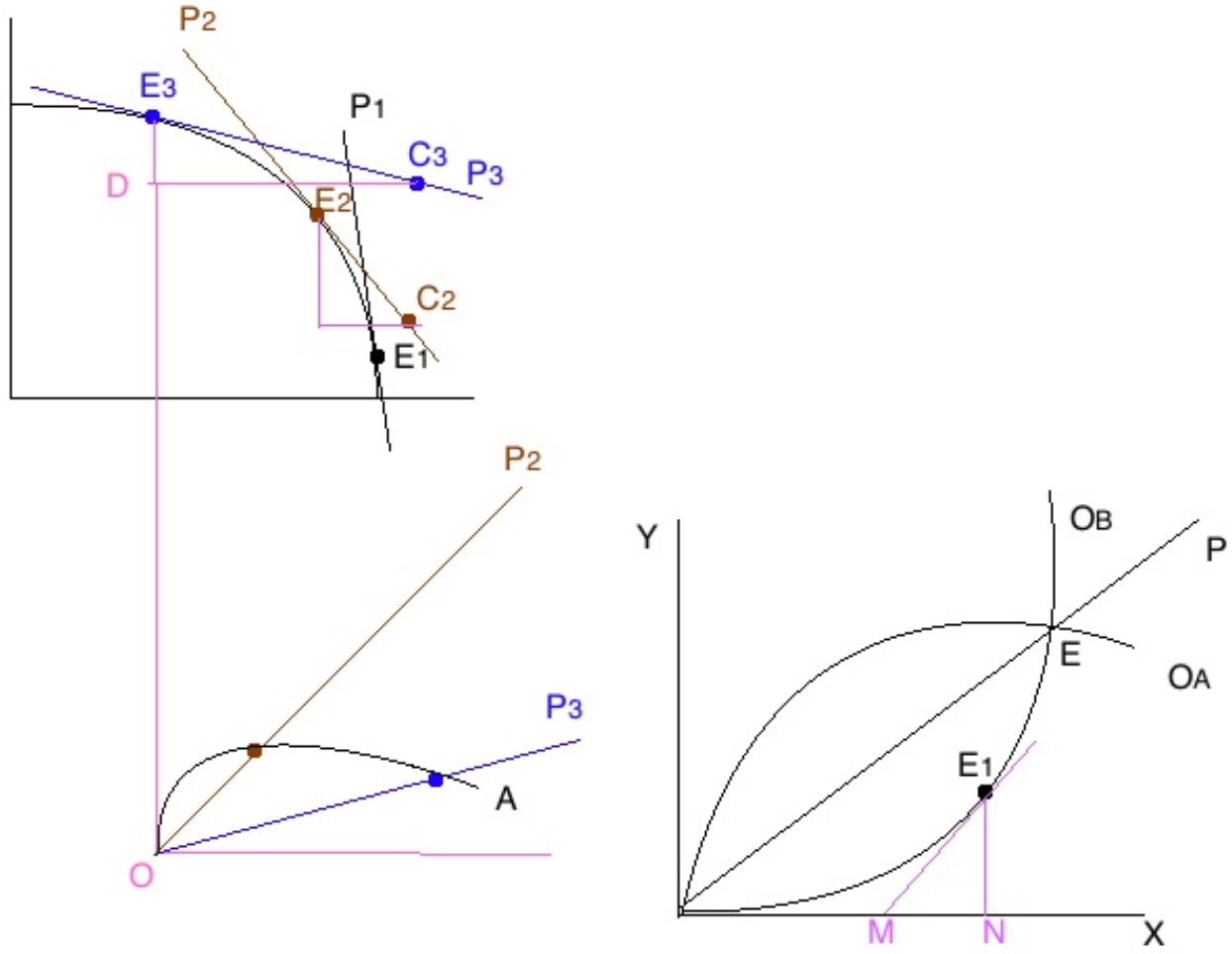
Stuart Mills' Theory of Reciprocal Demand
(a) Objective

1. To explain how the international commodity exchange prices will be determined. Mills says that equilibrium would be established at that ratio of exchange at which quantities demanded by each country of the commodity it imports from the other is exactly equal to what the other country is willing to supply and vice versa.

(b) Assumptions

1. Similarity of tastes in both countries.
2. Labor value of costs: Labor is the only factor of production and all units of labor are homogenous. Prices of each commodity is determined by labor cost.
3. Classical assumptions: Full employment. Perfect competition in all markets.
4. Free commodity trade and zero friction costs.
5. Static state: Supply of labor and technology both unchanged.
6. Mobility: Free intra-country mobility of labor but zero inter-country mobility.

(c) Offer Curves



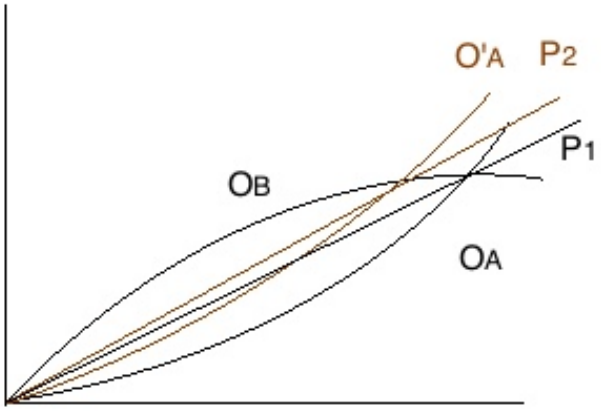
1. Derivation of offer curve: It determines the relative price of commodities at which trade can take place. For any given quantity of a commodity, it shows the amount of the other commodity the country is willing to exchange. Offer curves can be derived from the PPF analysis. In the PPF as can be seen @ price P_3, the country is willing to export DE_3 amount of Y in exchange of DC_3 amount of X. Thus plotting all such points we can get the offer curve.
2. Trade equilibrium: Similarly offer curve of the second country can be plotted as well. The point where the offer curves intersect is the price at which trade can happen. In this case it is E where O_A and O_B intersect and the relative price is P.
3. Terms of trade: The slope of ray OP represents the terms of trade for country A. As it moves higher we say terms of trade have improved for country A (since X is the commodity which A exports and Y is the commodity which A imports so now A will import more of Y for same amount of X's exports).
4. Elasticity: σ_{OC} = % change in imports / % change in exports = $(\Delta MM) / (\Delta X/X)$. @ E_1, $(\Delta M/\Delta X) = E_1N/MN$. and $(X/M) = ON/E_1N$. Thus $\sigma_{OC} = ON/MN > 1$. As we move up from the origin the elasticity increases.

(d) Model

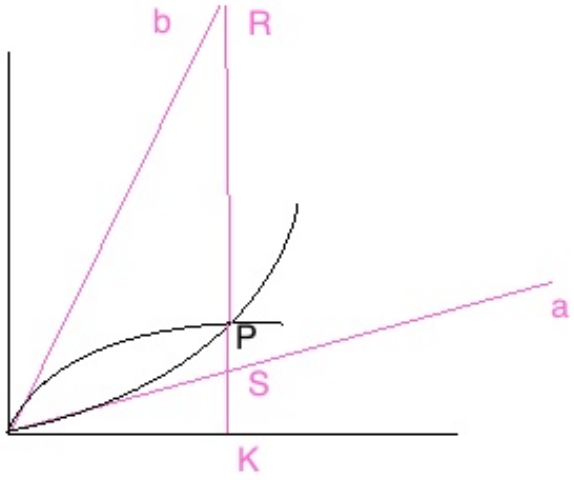
Output	X	Y
A	10	10
B	6	8

1. B has comparative advantage in Y and A has comparative advantage in X. Now Mills tries to find out the possible terms of trade between the 2 countries.
2. The domestic quantity ratios are: $(Y/X)_A = 1$ and $(Y/X)_B = 1.33$. Thus if B can sell Y at $Y/X > 1$ to A and A can sell X @ $Y/X < 1.33$ to B trade can happen. But the actual exchange ratio will depend on reciprocal demand.
3. Reciprocal demand: It is the strength and elasticity of a country's demand for the other country's products. If A's demand for B's Y is more intense i.e. inelastic, then the terms of trade will be near 1:1 or less favorable to A. If

B's demand for A's X is more intense i.e. inelastic, then the terms of trade will be near 1:1.33 or less favorable to B. Thus the possibility range of barter terms of trade is set by comparative efficiency in each country. Within this range, the actual terms depend on each country's demand for the other country's produce. Only those terms of trade are stable where exports offered by a country are sufficient to pay for the imports it desires.



1. Change in demand pattern: A change in demand pattern of a country for the other's country's exports can bring a change in the shape of its offer curve. Suppose A's demand for Y (its import and B's export) decreases or becomes more elastic. So its offer curve will shift to left as it now wants more of Y for same amount of X supplied. This will lead to a shift in equilibrium and terms of trade will change in A's favor. Thus higher the elasticity better the terms of trade.

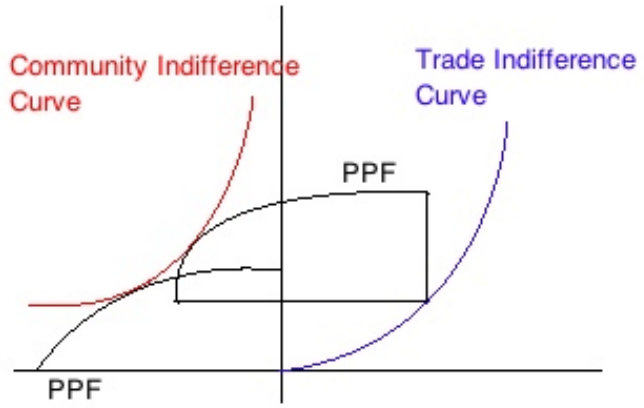


1. Gains from trade: Let a and b be the offer curves of A and B respectively under CRS conditions. Now A was prepared to offer OK to get SK. But actually it is getting PK (>SK) for it. So it is better off. Similarly B was prepared to offer RK for getting OK. But now it only has to offer PK (<RK) to get OK. Thus B is better off. But closer the point P to a, less the gain of A and more the gain of B and vice versa.

(e) Limitations

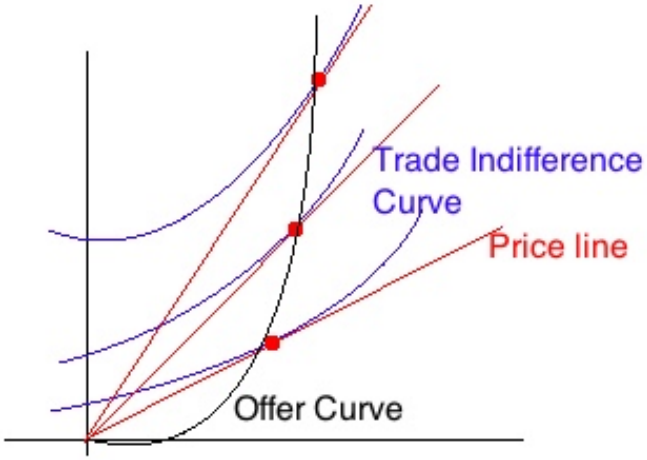
1. Doesn't pay attention to domestic demand. Each country will export only after satisfying domestic demand.
2. Other criticisms are similar to Ricardo.

Trade Indifference Curves Derivation



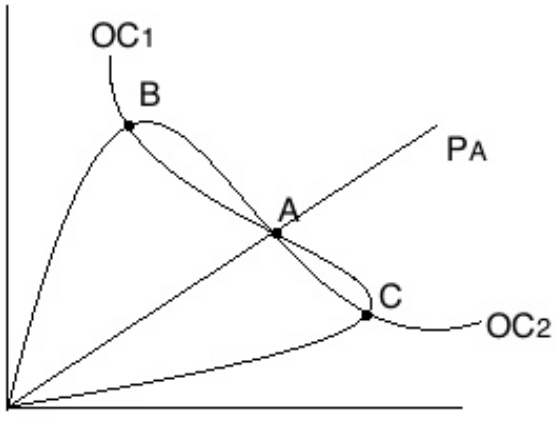
1. Trade indifference curve is created by moving the PPF tangent to the community indifference curve. Thus the trade indifference curve shows the various trade situations which provide a nation equal welfare. The level of welfare implied by a trade indifference curve is given by the community indifference curve from which the trade indifference curve is derived.

Offer Curve Derivation



1. We draw the trade indifference map. Then we find the price lines which are tangent to each trade indifference curve. The offer curve is the locus of such points of tangency. This is because for a given price ratio a community will like to reach the maximum welfare and that can be reached by point of tangency only.

Stable and Unstable Equilibria



1. @ point A, if lets say P_X/P_Y increases and becomes > P_A (or we move at a point above A) then country A would like to buy less of Y for a given amount of X and country B would like to offer more of Y for a given amount of X. So price of Y will fall further and we will move away from A. Thus A is unstable equilibrium. But @ point B if price ratio becomes > P_B then then A will like to import more of Y than B will like to export for given X. Thus Y will become dearer and P_X/P_Y will fall and we will move back to B. Thus B is a stable equilibrium.

Heckscher - Ohlin Theorem
(a) Statement

1. A country exports a commodity which uses its relatively more abundant factor more intensively.

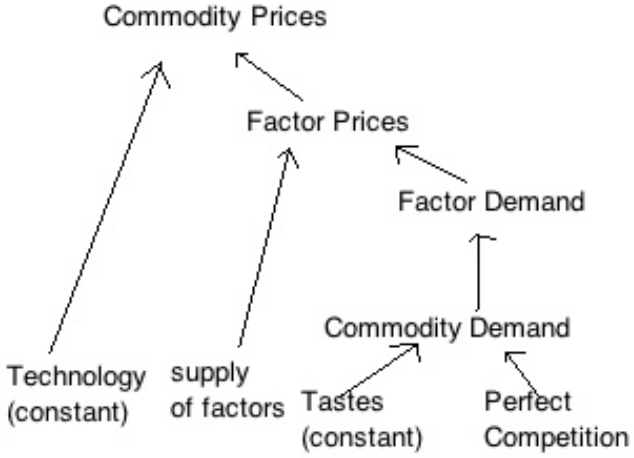
(b) Assumptions

1. There are 2 nations (A and B) , 2 commodities (X and Y), 2 factors of production (labor and capital).
2. Both nations have same technology in production. This means isoquants are identical in both nations for each product and further if say factor prices are same in both nations then both will use exactly the same amount of labor and capital in the production of each commodity. It is another case though that because factor prices are different in both nations then they may use more of the relatively cheaper factor in the production.
3. Commodity X is labor intensive while commodity Y is capital intensive in both nations. This means that for a given (w/r), (K/L) ratio is higher for commodity Y in both nations than (K/L) ratio for X. This must be true for all possible (w/r) i.e. @ no given w/r should K/L in Y become less than K/L employed in X. It doesn't mean K/L is same in both nations for Y it just means K/L is higher for Y than X in both nations.
4. Both commodities are produced under CRS in both countries. It doesn't mean DRS doesn't prevail for any one factor. It simply means that taken both factors together CRS prevails.
5. There is incomplete specialization in both nations. This means none of the nations is very small so as to exclude boundary solutions.
6. Tastes are equal in both nations. This means for a given commodity price ratio (P_X/P_Y) both nations will consume same proportion of X and Y. Note that this doesn't imply that they will be on same indifference curve.
7. There is perfect competition in both commodity and factor markets in both nations. There is perfect factor mobility within each nation but no international factor mobility. There are no transport costs, tariffs or other obstructions to the free flow of trade. All resources are fully employed in both nations.
8. International trade between the two is balanced.

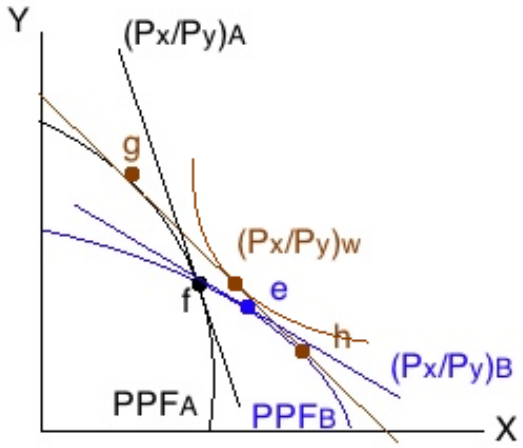
(c) Factor Abundance

1. There are 2 ways of gauging factor abundance. One is in terms of physical units i.e. if the ratio of total amount of labor to total amount of capital in A > ratio of total amount of labor to total amount of capital in B then we say A is labor abundant. The other way is in terms of relative factor prices. Country A is relatively abundant in L if $(w/r)_A < (w/r)_B$ so that A will be abundant in L.
2. While the factor abundance definition in physical terms only takes into account the relative supply of factors the price definition takes into account both supply and demand. But once we assume that the tastes (i.e. the demand side) are same in both countries then both definitions give same result.

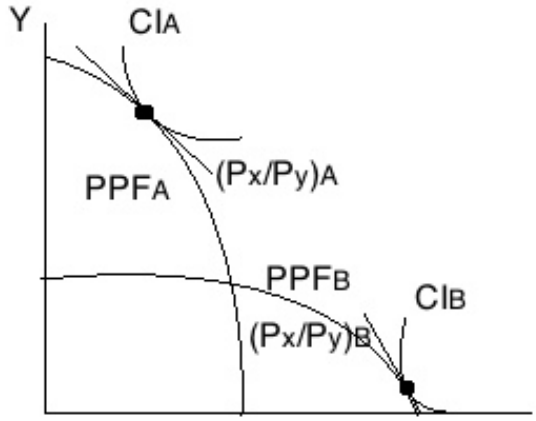
(d) General Equilibrium Framework of HO Theory



1. Note that the HO model doesn't require that tastes, distribution of income (market structure), technology etc. be exactly the same. It just requires them to be broadly similar to work. The above figure shows intuitively how the various assumptions will lead to trade according to HO theorem.



1. HO theorem via PPFs: As can be seen from the figure $(P_x/P_y)_A > (P_x/P_y)_B$ so the tangent to PPF_A will be steeper and cut @ f where more of Y will be produced than X. Similarly in B more of X will be produced than Y @ e. As trade happens, commodity prices equalize and this leads A to produce more of X and B to produce more of Y @ g and h respectively.



1. Effect of tastes: The theorem may break down if the tastes in both countries vary a lot. They can vary but not vary sufficiently to neutralize the tendency of difference factor endowments and PPFs from leading to different relative commodity prices in isolation. If say A consumes more of Y and B consumes more of X. As can be seen due to consumption, the slope of the autarky price line in A $(P_x/P_y)_A$ < slope of autarky price line in B $(P_x/P_y)_A$. This means that in A commodity X is cheaper while in B commodity Y is cheaper. Since a country exports the cheaper commodity, A will export X and B will export Y and thus HO theorem breaks.

(e) Advantages

1. It is free from labor theory of value and considers general equilibrium.
2. It is superior to Ricardian theory because it explains the reasons behind comparative advantage. For this it takes both labor and capital and their costs as well as productivities. It considers the different endowments of factors.
3. It explains the locational theory of industries.

(f) Criticisms

1. It is a static theory.
2. Homogenous factor and homogenous technology assumptions not realistic. For example textiles may be

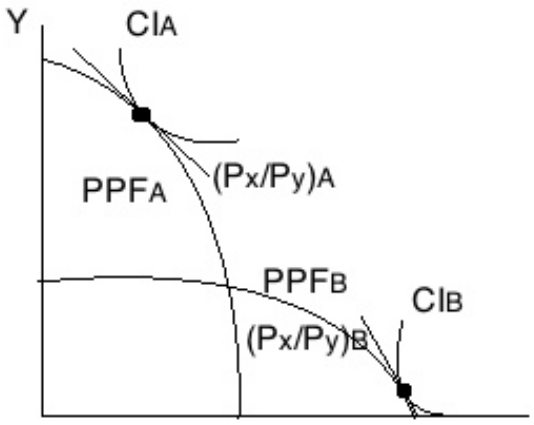
produced by handlooms in a country and power driven mills in the other.
3. Tastes and demand patterns are not identical.
4. Full employment, perfect competition and zero transport cost assumptions are not realistic.
5. In many cases like raw materials it is not the factor prices which determine prices but their rent.

Leontiff's Paradox
(a) Paradox

1. He studied US data of 1947 where he aggregated various industries into 50 sectors. He took 2 factors - L and K and estimated the capital and labor intensities of exports and import substitutes in US and found that US' exports use $13,9991 of capital per man year while import substitutes used $18,185 of capital per man year i.e. ~30% higher.
2. Labor productivity: Leontiff himself tried to explain it by saying the labor in US is more productive than labor in other countries. Hence the higher content of labor in exports. But this ignores the fact that capital is also more productive in US.

(b) Reconciliation with H-O Theorem

1. Tariffs ignored. Studies indicate that the most protected industries in US are the labor intensive industries.
2. Wrong to use 2 factor mode: He thus neglects other factors like natural resources. Further techniques for these natural resources extraction and processing are capital intensive everywhere and US may be deficient in natural resources so that it has no alternative but to import them. Classifying them under a 2 factor model may give wrong results. But later studies show that excluding natural resources is not sufficient unless human capital is also accounted for.
3. Wrong to use import competing industries: US is capital intensive. So its import competing industries will be using capital intensively compared to the exporting countries where it may be labor intensive. But still it should not lead to a reversal. Because even though import substitutes may use higher capital than the countries where US imports the goods from, they shouldn't use higher capital than the exports made in US.
4. Neglect of human capital and this was the most important source of bias. Since US labor embodies more human capital than foreign labor adding human capital component to physical capital will make US exports more K intensive than the import substitutes. Similar is the case with R&D.
5. Factor intensity reversal.
6. 1947 was not a good year to chose for the study because the world had not recovered from WW2. So Leontiff did the study again with 1951 as base year and found that the paradox had reduced to the extent of 6% but not eliminated altogether.
7. Different consumption patterns: US consumers may have higher demand for capital intensive products. But empirical research doesn't support it and tastes are found to be generally same across countries.

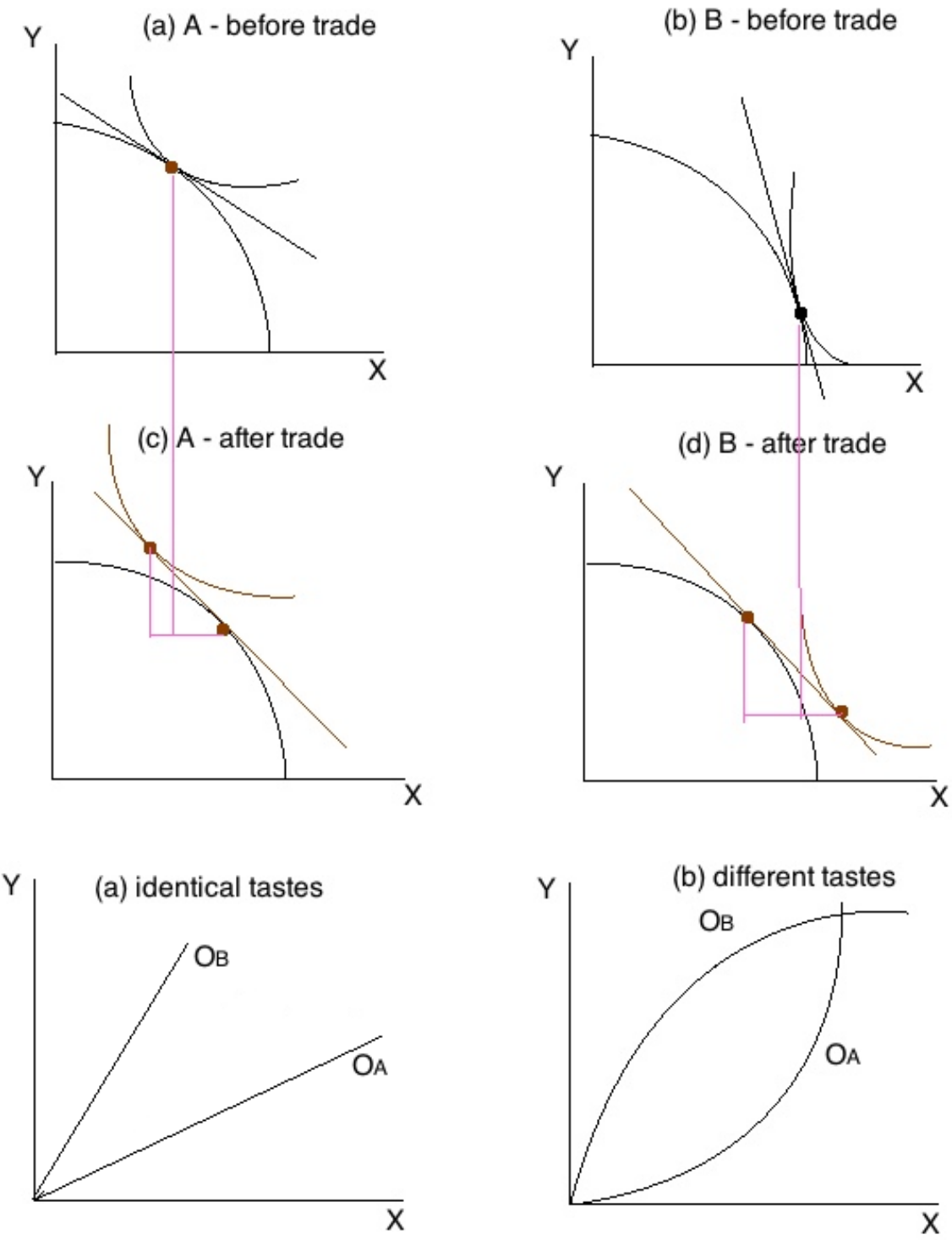


8. Product cycle theory: As the product becomes more standardize mass production moves to other countries.

Q. Does the HO theorem withstand the factor intensity reversal test? In this context state the relevance of Leontief paradox. (2010, I, 30)

Q. "If each country is endowed with a certain fixed commodity combination, the differences in demand patterns in these

countries can lead to emergence of international trade." Explain this statement with the help of offer curves of the two countries. (2009, I, 20)



Q. "Heckscher - Ohlin theory does not invalidate the classical theory of comparative cost but rather powerfully supplements it." Substantiate the statement. (2007, I, 60)

Samuelson's Factor Price Equalization Theory

Q. How does international trade bring about equality in factor prices? (2001, I, 20)

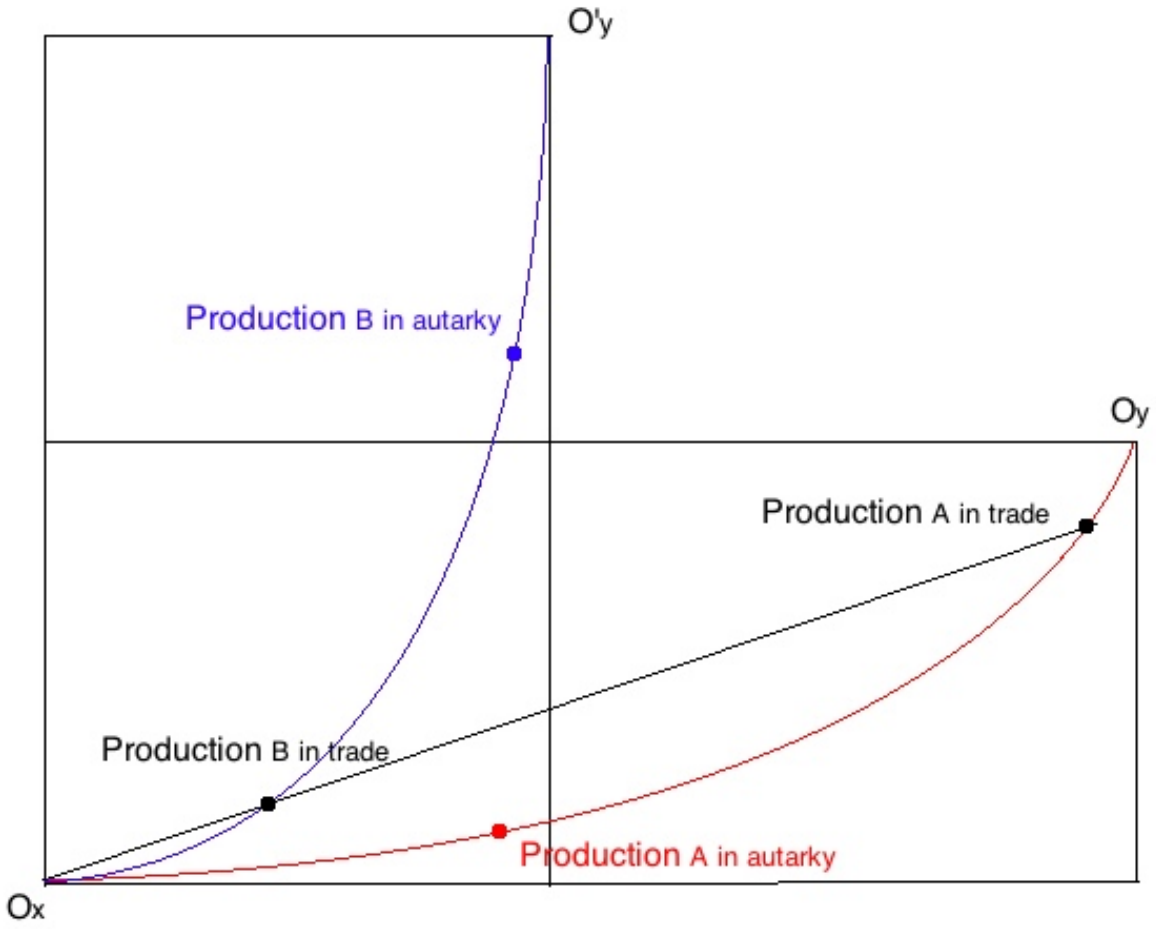
(a) Statement

1. Samuelson showed that free trade invariably brings about equality in relative as well as absolute factor prices.

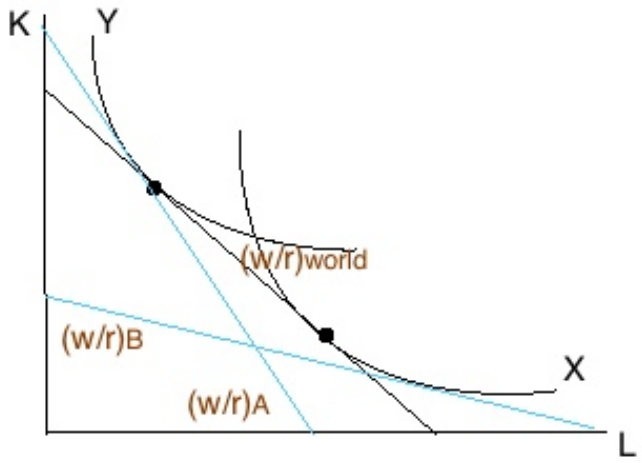
(b) Assumptions

1. Production function is homogenous of degree 1 but diminishing returns to individual factors, free trade, zero transport costs, full employment, factor mobility, perfect competition.
2. There are quantitative differences in factor endowments but qualitatively they are homogenous i.e. one unit of factor L in country A is same as one unit of factor L in country B.
3. The production functions of a commodity is identical in both countries i.e. same isoquants.
4. One commodity (X) is more labor intensive than the other (Y). Factor intensity reversal is absent i.e. if X is labor intensive in A it will remain labor intensive in B and vice versa.
5. Identical tastes in both countries.

(c) Model (Relative Factor Price Equality)

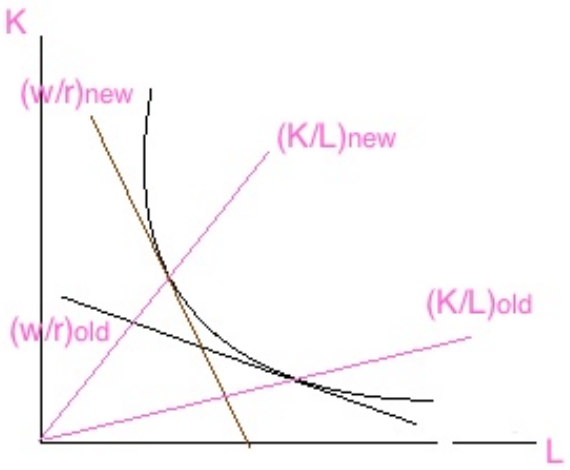


1. With trade both countries A will produce more of X and B will produce more of Y. But production of X will release resources from Y which will comprise of less of labor and more of capital. Thus relative abundance of labor will decrease in A and K/L will tend to rise. Similarly in B, K/L will tend to decrease. Thus both will become equal and if K/L are equal then from assumption of same technology (that at same wage-rent ratio capital-labor ratio employed should be same in both countries) w/r will also be equal.



(d) Model (Absolute Factor Price Equality)

1. By homogenous function of order 1, we know that for 1 unit of output of X, $1.P_X = MPP_L.L + MPP_K.K$ or $P_X = w.L + r.K$. Now dividing throughout by L, $P_X/L = w [1 + (K/L) / (w/r)]$. Now due to relative factor price equalization, K/L are same in both countries, w/r are same in both countries. P_X/L is also same in both countries because this is nothing but APP_L which under CRS conditions and homogenous labor will be same in both countries. Thus w has to be same in both countries.
2. Magnification effect: If price of the labor intensive good rises by 10%, then wages will rise by more than 10%. This is because $P_X = a . w + b . r$. Now since r is falling, w has to rise more than rise in P_X. This means that due to trade the relatively abundant factor is better off and relatively scarce factor is worse off.



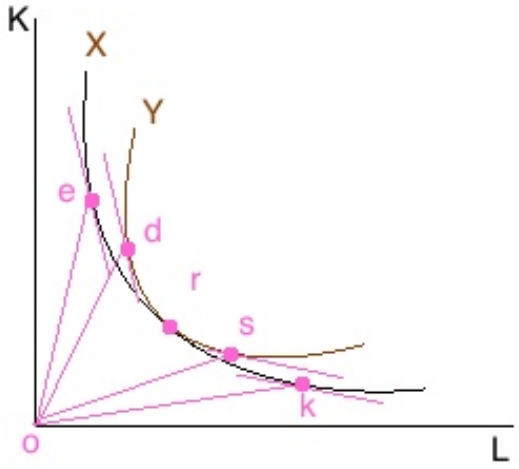
1. Effect of change in factor prices: As Y releases more K and less L and X wants more L and less K, w goes up and r comes down. Thus capital becomes cheaper and labor more expensive. Now given an isoquant, a π maximizing firm will chose a capital - labor ratio such that $w/r = MRTS_{L,K}$. So as w/r goes up, firms chose higher capital than labor.

(d) Criticism

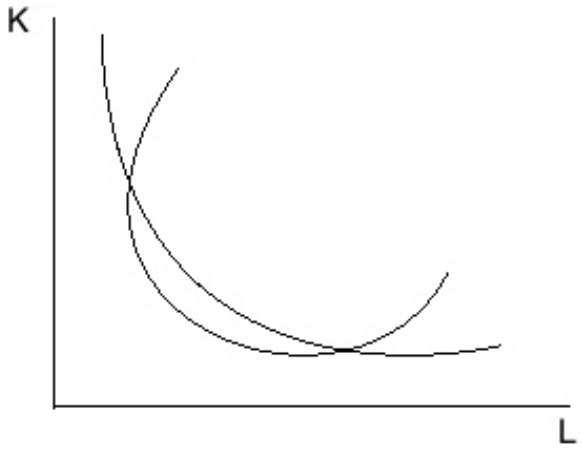
1. Production functions are often not same in both countries. Technologies and hence productivity are different.
2. Factor price equalization is not possible under IRS. If economies of scale exist than more can be produced in the expanding industry without the need of much additional factor.
3. If a country is so small that it specializes completely then a boundary solution is reached and factor prices may not be equalized.
4. Static theory, perfect competition not existent.
5. Myrdal and all criticize it as real world doesn't see factor price equality.

Relaxing the Assumption that X Should be Labor Intensive in Both Countries - Factor Intensity Reversals

1. It means that the same good X can be labor intensive in one country and capital intensive in the other. In such a situation HO theorem breaks down as both countries try to export the same good. It happens when one isoquant sits on the other or intersects it @ multiple points.
2. Factor intensity reversal is linked to the elasticity of substitution of L for K for the two products X and Y. If one product has high elasticity of substitution and the other has lower than there are more chances of factor intensity reversal. Thus if say the substitution elasticity of L for K is high for X and very low for Y then A will manufacture X with labor intensive methods but B will manufacture X with capital intensive methods. Thus HO theorem breaks.



1. Single factor intensity reversal: Now in country A, OE is steeper than OD this means X has a higher (K/L) ratio than Y or X is more capital intensive in A. Similarly in country B, OS is steeper than OK. It means Y is more capital intensive than X in B. Thus X is capital intensive in A but labor intensive in B, so both countries will try to export same commodity.

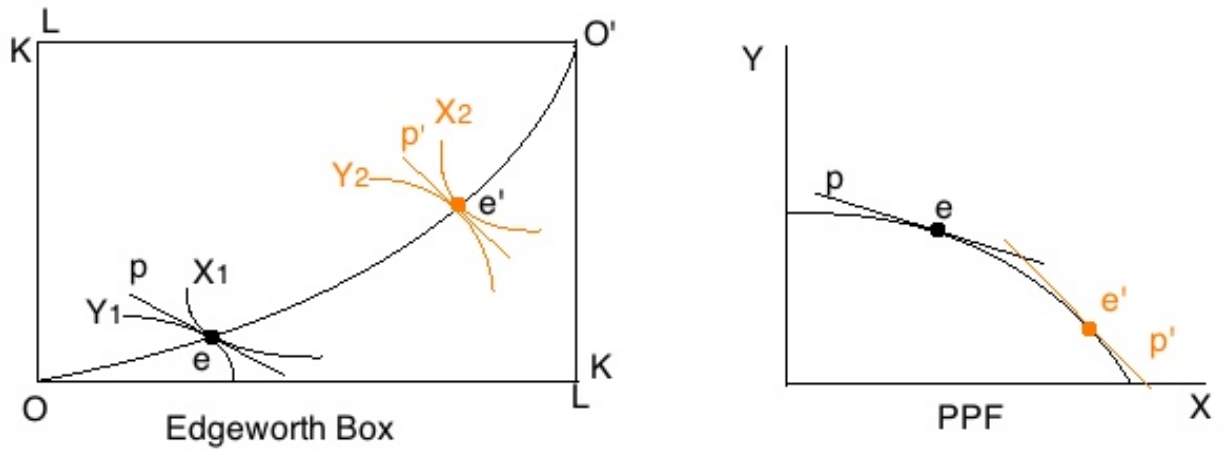


1. Multiple factor intensity reversals: They will occur when the isoquants intersect each other @ multiple points.

Stopler - Samuelson Theorem: Effect of Change in Commodity Prices on Real Factor Rewards
(a) Assumptions

1. Production function is homogenous of degree 1 but diminishing returns to individual factors, free trade, zero transport costs, full employment, factor mobility, perfect competition.
2. There are quantitative differences in factor endowments but qualitatively they are homogenous i.e. one unit of factor L in country A is same as one unit of factor L in country B.
3. The production functions of a commodity is identical in both countries i.e. same isoquants.
4. One commodity (X) is more labor intensive than the other (Y). Factor intensity reversal is absent i.e. if X is labor intensive in A it will remain labor intensive in B and vice versa.
5. Identical tastes in both countries.

(b) Model



1. Let in autarky, country A be producing @ e with isoquants being X_1 and Y_1 and (w/r) being the line p. Now it opens up for trade. Since $(P_x/P_y)_{world}$ is higher than domestic, so it will produce more X and also $(P_x/P_y)_d$ will increase. As it produces more of X resources will have to be released from the production of Y. Assuming it moves on the contract curve (i.e. resources are fully employed) then it moves from e to e'.
2. But expansion of X needs more labor and less capital and contraction of Y is releasing more capital and less labor. So a shift will be made from labor to capital in the production process and amount of capital per labor will increase. Thus MPP_L will rise while MPP_K will fall. Since factors are paid out their marginal products, w will rise and r will fall. Thus trade leads to rise in rewards for the more abundant factor.

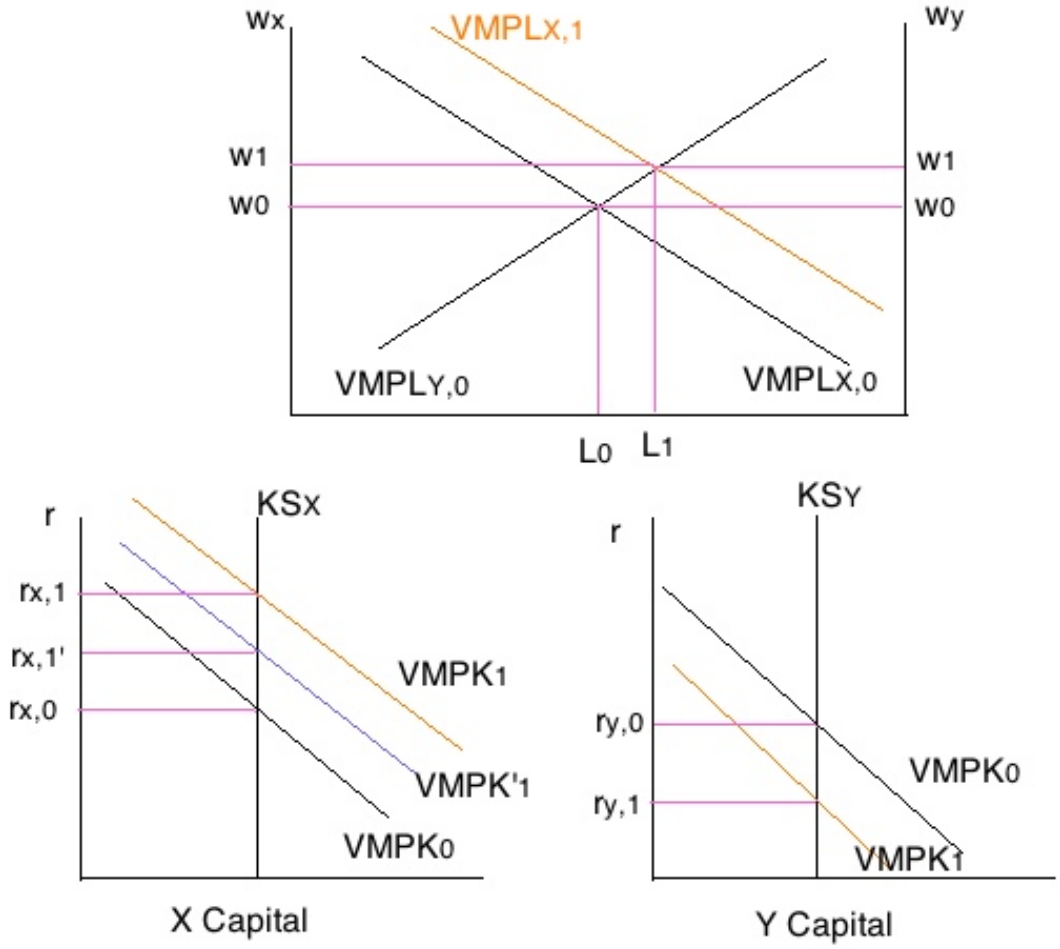
(c) Policy Implications for Developing Countries

1. Since developing countries are labor abundant, export promotion can lead to betterment of labor. Import substitution will lead to lowering of rewards for labor and increasing for capital (because import substitution is needed for commodities where we don't have comparative advantage in i.e. capital intensive and this will lead to withdrawal of resources from labor intensive sectors).
2. It must be noted that the theorem doesn't say international trade will bring about or even tend to bring about equality of per capita incomes. It merely predicts international trade will tend to reduce the international differences in the returns to homogenous factors. Per capita incomes may diverge due to difference in productivities of workers in the two countries.

Short Run Inter Sector Factor Immobility - Labor vs Capital Abundance
(a) Assumptions

1. Lets assume labor in a country is perfectly mobile between sectors X and Y but capital isn't i.e. capital used for producing X can't be used to produce Y. So what will be the effect of a rise in P_x keeping P_y constant?
2. Full employment, perfect competition in all markets.
3. Identical tastes.

(b) Model

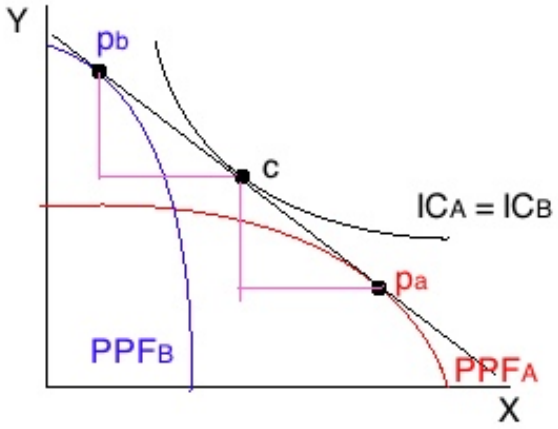


1. Labor market: Labor demand is given by VMP_L in any sector which together with supply curve of labor will determine wages (w). Since labor is homogenous and perfectly mobile, if there is any increase in wages of any one sector, labor will flow from the other sector to the sector where wages have increased. Thus wage equality will prevail. Now an increase in price of X will increase $VMPL_X$ (because VMPL = MPP_L * P) and because it is perfect competition, VMP_L will become workers' wages. Due to increase in $VMPL_X$ for each employed labor it will shift right and thus wages will increase in both industries but the rise in wages will be < rise in P_X.
2. Capital market: As labor is released from Y to X and capital can't flow, so in Y each unit of capital will now have less labor to work with. Thus $MPP_{K,Y}$ will fall leading to fall in VMP_K and because its perfect competition (so that capital is paid out its VMP_K) rental of capital in Y will fall as well (from $r_{Y,0}$ to $r_{Y,1}$). In X similar argument means rentals will rise from $r_{X,0}$ to $r_{X,1'}$. But because price of X has also increased, rentals will rise further to $r_{X,1}$.
3. Implications for trade: Since a country exports the commodity more intensively using the factor it is abundant in, in our case it would be X (assuming country was abundant in L). Also since L is mobile, we see in SR capital owners in X will gain and Y will lose. Also prices of X will rise and Y will fall. So consumers who consume more X will lose in SR. But in LR both labor and capital can move between the 2 industries and Stopler - Samuelson theorem will hold. Thus L will gain while K will lose in both industries.

Short Run Inter Sector Factor Immobility - Capital 1 vs Capital 2 Abundance
(a) Assumptions

1. Lets assume labor in a country is perfectly mobile between sectors X and Y but capital isn't i.e. capital used for producing X can't be used to produce Y.
2. Further both countries are equally abundant in L but A is more abundant in K_X and B in K_Y.
3. Full employment, perfect competition in all markets.
4. Identical tastes.

(b) Model



1. A has advantage in X and B has in Y. When trade happens, A will increase the production of X and export it while B will increase the production of Y and export it. This will lead to rise in (P_X/P_Y) in A. Resources will shift from Y to X in A. Rest of the analysis is same.
2. Labor market: Labor demand is given by VMP_L in any sector which together with supply curve of labor will determine wages (w). Since labor is homogenous and perfectly mobile, if there is any increase in wages of any one sector, labor will flow from the other sector to the sector where wages have increased. Thus wage equality will prevail. Now an increase in price of X will increase $VMPL_X$ (because VMPL = MPP_L * P) and because it is perfect competition, VMP_L will become workers' wages. Due to increase in $VMPL_X$ for each employed labor it will shift right and thus wages will increase in both industries but the rise in wages will be < rise in P_X.
3. Capital market: As labor is released from Y to X and capital can't flow, so in Y each unit of capital will now have less labor to work with. Thus $MPP_{K,Y}$ will fall leading to fall in VMP_K and because its perfect competition (so that capital is paid out its VMP_K) rental of capital in Y will fall as well (from $r_{Y,0}$ to $r_{Y,1}$). In X similar argument means rentals will rise from $r_{X,0}$ to $r_{X,1'}$. But because price of X has also increased, rentals will rise further to $r_{X,1}$.

Relaxing Same Technology Assumption

1. Nations don't generally employ same technologies of production. But technology can be regarded as a factor of production and trade based on different endowment of this factor can be incorporated into HO theorem.
2. Trade based on differences in technology over time however can be explained by product cycle theory.

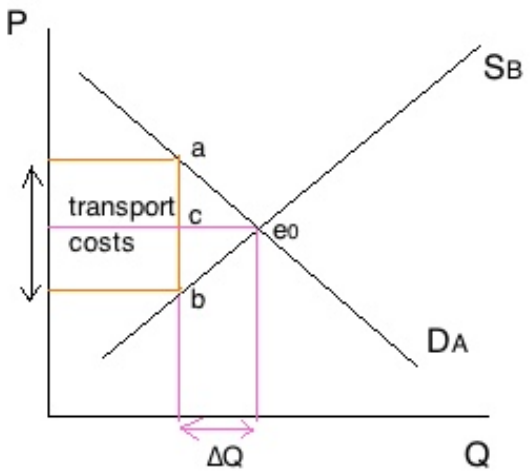
Relaxing the Full Employment Assumption

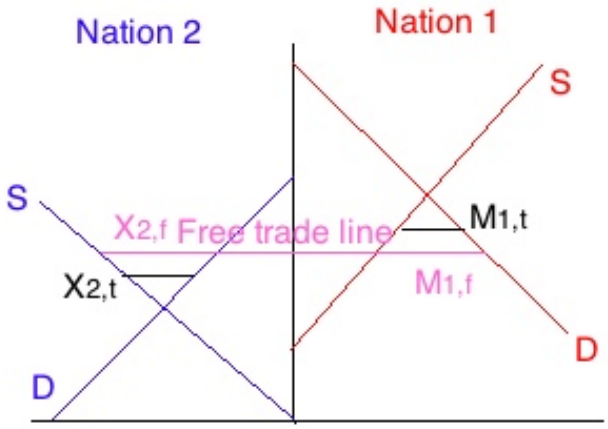
1. In such a case HO theory will break down because there will be no opportunity cost in switching over.

Relaxing the Balanced Trade Assumption

1. In such a case a nation may import some of the commodity it has comparative advantage in and thus HO theory will break down. But empirically most trade deficits are very small compared to GDP.

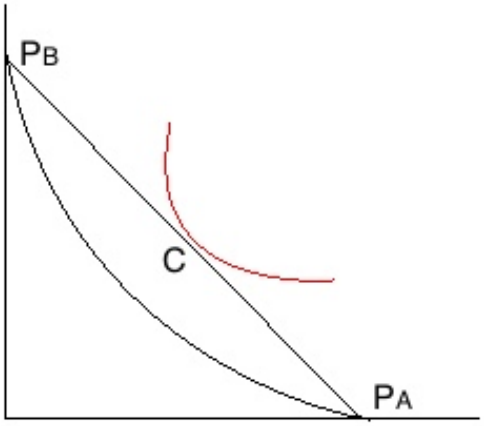
Relaxing Zero Transport Costs Assumption





1. It leads to a fall in trade and it can be shown that transport costs are shared between the two nations in the ratio of their price elasticities of supply and demand (just like an indirect tax).
2. The second figure shows the impact of the transportation cost on the trade between the 2 nations (both exports and imports fall).

Relaxing the CRS and Perfect Competition Assumption: Trade under External Economies of Scale
(a) Comparative advantage vs Intra Industry Trade



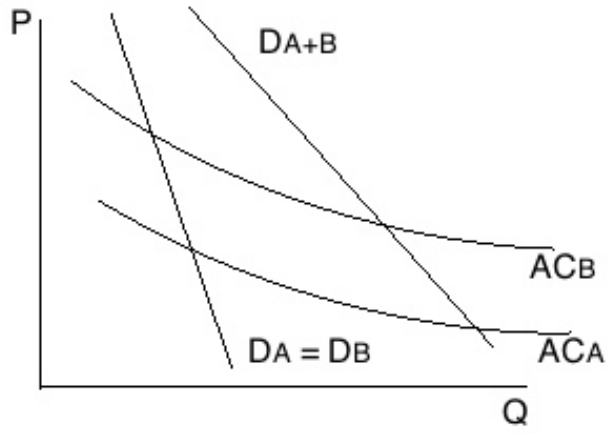
1. While comparative advantage determines the pattern of inter industry trade, IRS determines the pattern of the intra industry trade. Even in the case where both nations have identical PPFs and identical TICs we can see that IRS can generate trade. In the above case nation A can specialize in X and nation B in Y completely and trade to consume @ C.
2. International trade forces each firm to focus on one or two products instead of many had it been producing for the domestic market only. Thus it can do product differentiation and can generate economies of scale. Thus in Europe (before EU) and US plant sizes were roughly the same and yet unit costs were higher in EU because due to higher tariffs EU firms produced many products. When tariffs were eliminated each firm was forced to specialize in producing where it has comparative advantage and this reduced unit costs as well. And this product differentiation also gives rise to intra-industry trade. Thus intra industry trade is dependent upon economies of scale and product differentiation and not on HO theorem.
3. So while trade based on HO theorem is likely to be larger when the difference between factor endowments is greater i.e. developed vs developing countries, intra industry trade is likely to be greater when such differences are lower.
4. In IRS case autarky commodity prices can't give any indications as to the direction of the trade. This is because the large country may have lower autarky unit price due to its large market but once trade starts even small country can produce for the entire market and thus produce at a lower cost than the larger country.
5. While HO theorem based trade rewards the abundant factor only, trade based on IRS can reward all factors. That is why there is little resistance to intra-industry trade while much more to comparative advantage based

trade.

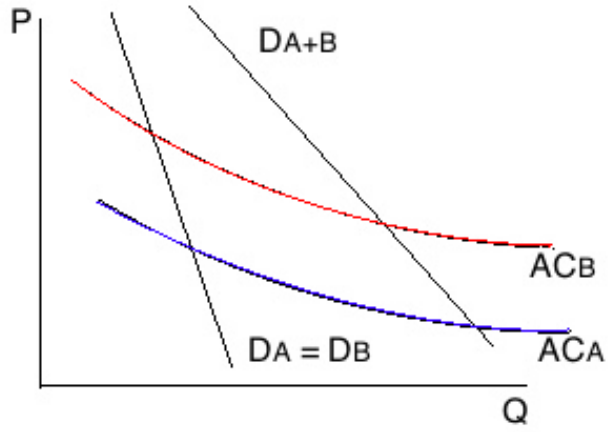
6. Modern global supply chains can be seen as an extension of IRS trade where firms try to use each country's comparative advantage to best possible use.

(b) Measuring Intra Industry Trade

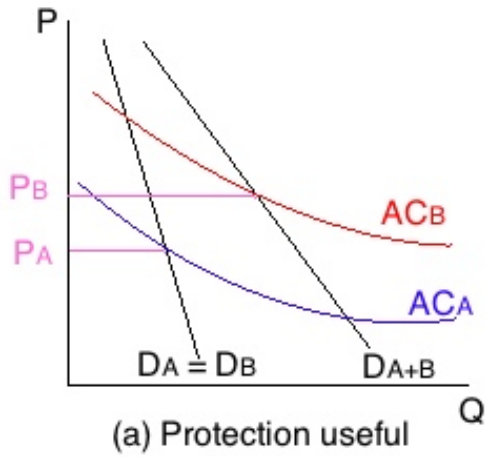
1. Intra industry trade index (T) = 1 - {|X-M| / (X+M)} where X and M are exports and imports from same industry. Such intra industry trade has been rising over the years.

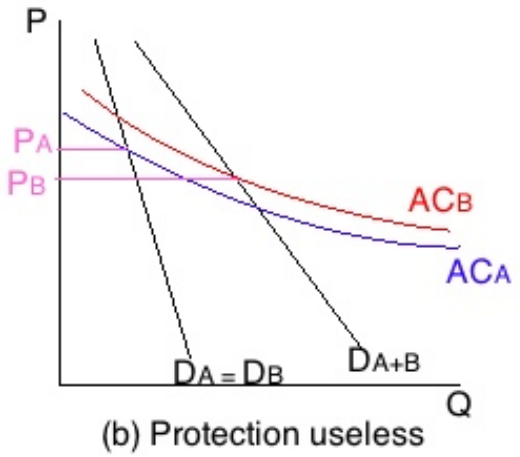


1. External economies of scale result from positive externalities. Let country A have comparative advantage over B in X after taking into account external economies of scale i.e. for any given level of industry output average costs in A < average costs in B. In the above case it is clear A should produce for the full demand of X in both the countries while B should specialize in Y (where it will have the comparative advantage).



1. Historical accident: Due to historical accident let the industry have been developed in B. Thus even though A has comparative advantage it cannot start the industry as any firm starting in A will have to face costs which are much higher than where B's firms are producing currently. Can protection help in such a case?





1. Protection useful: If market of A is large enough such that firms catering to D_A only can produce at a cost (P_A) which is lower than what is incurred by firms in B producing in both A and B (P_B), then protection can help.
2. Protection useless: If $P_A > P_B$ even after exhausting domestic market, protection is useless.

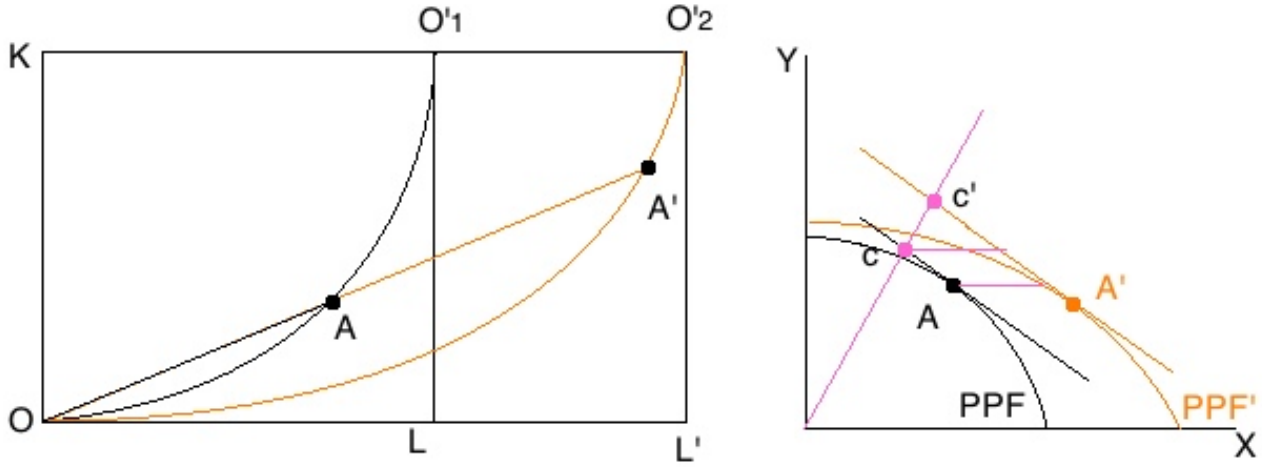
Rybczynski Theorem: The Effect of Growth on Trade
(a) Statement

1. At constant commodity prices, an increase in the endowment of one factor will increase by a greater proportion the output of the commodity intensive in that factor and will reduce the output of the other commodity.

(b) Assumptions

1. Perfect competition in all markets, free trade, zero transportation costs, full employment.
2. One commodity (X) is labor intensive and the other (Y) is capital intensive. Their production functions are different.
3. Commodity and factor prices remain constant even as the supply of only one factor increases.

(c) Model



1. For product prices to remain same, factor prices must also remain same. So capital - labor ratio remains same even as one factor increases (since @ constant w/r and same technology, K/L remains constant). This means that in the edgeworth box diagram we move from A to A' and slope of OA = slope of OA'. If K/L has to remain constant then there must be a decrease in the production of Y so as to release lot of K and only little L so that the so released K can be used with residual L and employed in the production of X.
2. Magnification effect: X rises by a greater proportion than the increase in L because some L and K are also transferred from Y.
3. In the above left figure, @ A we were @ full employment. Now only 1 factor has increased and this has to be employed as well. But production can't happen with one factor only. So one commodity has to liberate resources.

Because K/L remains same, if L increase then commodity Y's production must go down to liberate some K which will be combined with more L than it was employing in Y to produce more X. Thus production of X goes down while that of Y comes down. Note that in autarky P_X/P_Y can't remain same after the change in factor endowment unless Y is an inferior good.

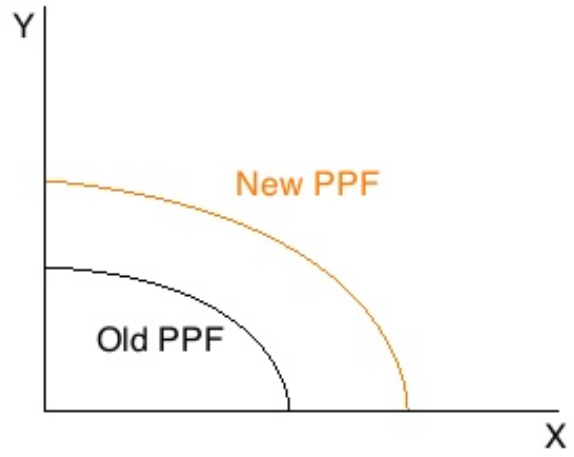
4. Effect on trade: We assume here that none of X or Y are inferior goods. With growth of L, production moves from A to A' and consumption from c to some c'. Now current increase in production of X > increase in production of X had there been no decrease in production of Y (magnification effect). This is because currently due to fall in production of Y resources have been released which are used to produce even more X. Now as long as Y is not an inferior good, rise from c to c' means increase in consumption of X < what it would have been had Y been an inferior good (look at horizontal projection of cc', it is less than the horizontal distance between the two parallel price rays). So rise in consumption of X is less than rise in production of X and hence trade will be higher.

Technical Progress and Trade: Effect of Growth on International Trade

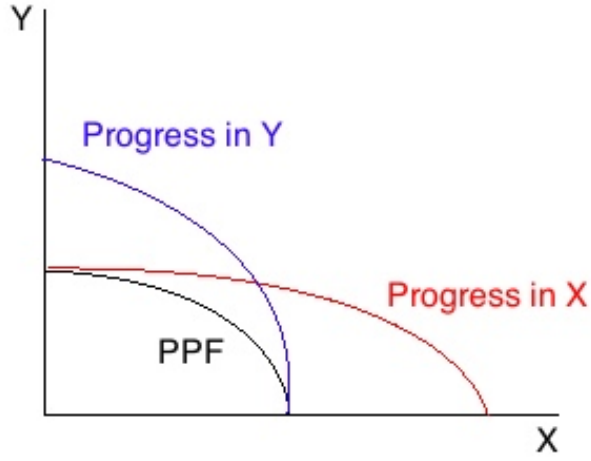
(a) Types of Technical Progress

1. Neutral technical progress: It increases the productivity of L and K in the same proportion so that K/L remains unchanged (even after the technical progress) for unchanged w/r. All that happens is that the given output can now be produced with less of both L and K.
2. Labor saving technical progress: It increases the productivity of K proportionately more than the increase in productivity of L. Thus K/L increases post the progress for unchanged w/r. Thus it leads to more K per unit of L.
3. Capital saving technical progress: It increases the productivity of K proportionately less than the increase in productivity of L. Thus K/L decreases post the progress for unchanged w/r. Thus it leads to less K per unit of L.

(b) Technical Progress and the PPF



1. Above figure shows the effect of neutral technical progress if it happens in both X and Y to the same extent. PPF simply shifts parallelly outwards.



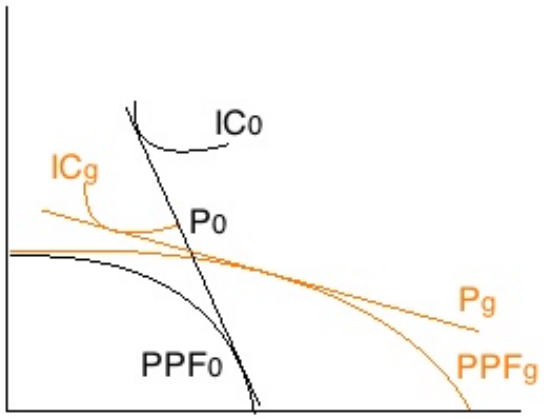
1. Above figure shows the effect on the nation's PPF when the neutral technical progress occurs only in commodity X or only in commodity Y. Note that if the progress happens in X only then production of Y will not increase @ 0 production of X.
2. In the absence of trade or a small nation case, all types of technical progresses tend to increase nation's welfare.

(c) Effect of Growth on Trade - Small Country Case

1. Technical progress and/or factor growth will tend to push PPF outwards. The effect on the volume of trade depends on the rate at which the output of the two commodities grows and the changes in the consumption pattern as the income grows. Note that small country means ToT will remain unchanged.
2. If the output of the exportable commodity (X) grows proportionately more than the output of the importable commodity (Y) (@ constant relative commodity prices which is true because of the small country assumption) then growth tends to lead to greater than proportionate expansion in trade and is said to be protrade. If they grow in same proportion, growth is neutral or else antitrade. On the other hand if the consumption of the nation's importable (Y) increases proportionately more than the consumption of nation's exportable (X) then it is protrade otherwise neutral or antitrade. What actually happens to the volume of the trade depends on the interplay of the production and the consumption effect. Thus the approach to study the effect of such a growth has to be taxonomic. For instance look at "effect on trade" under Rybczynski theorem.
3. If both production and consumption growth are neutral, volume of trade will increase at the same rate as the increase in production. With neutral production and protrade consumption, the volume of trade would expand proportionately more than the production. With neutral production and antitrade consumption the volume of trade would expand proportionately less than production. Neutral progress in the production of exportable commodity only is protrade and neutral progress in production of Y only is antitrade (given constant tastes). But regardless of changes in trade, the per capita welfare will increase.

(d) Effect of Growth on Trade - Large Country Case

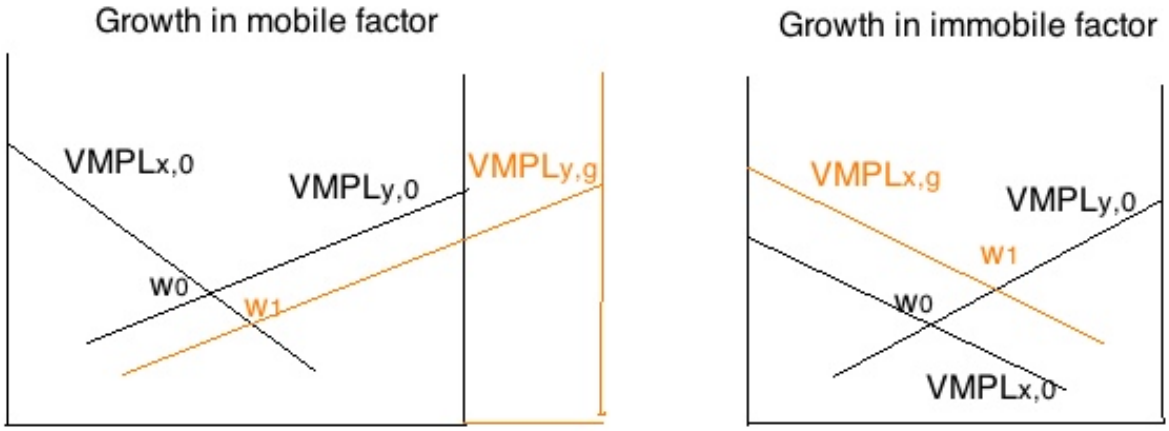
1. ToT effect of growth: If the growth would have increased the volume of trade had the relative commodity prices been constant, then in a large country case (i.e. when the prices are allowed to vary) the ToT of the nation will decline and it would tend to decrease nation's welfare. On the other hand if the growth were antitrade then ToT would improve and it would tend to increase nation's welfare.
2. Wealth effect of growth: It refers to the per capita output as a result of growth. A positive wealth effect increases nation's welfare. Note that it may decrease if only the population increases.
3. Thus whether growth has positive or negative effect on the nation's welfare depends on the combination of the above two effects. For instance where technical growth takes place only in the importable commodity then ToT effect is positive and so is the wealth effect. So net effect will definitely be positive.



1. Immiserizing growth: It is shown in the above figure where the impact of growth (technical progress in this case in commodity X only) in ToT is so much that it more than offsets the positive wealth effect. It is likely to occur when (a) growth tends to increase exports of the nation substantially, (b) the nation is so large that an attempt to increase the exports will lead to substantial deterioration in ToT, (c) price elasticity of nation 2's demand for nation 1's exports is very low i.e. reciprocal demand is low so that substantial reduction in price of X is needed to

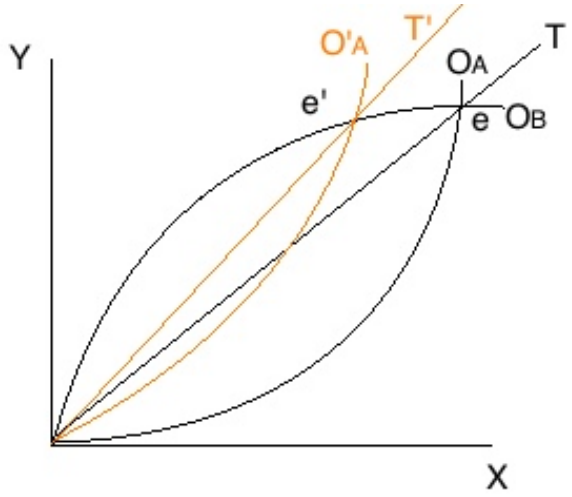
push through the increased quantity, and (d) nation 1 is so heavily dependent on trade that a substantial deterioration in ToT will lead to overall decrease in welfare.

(e) Growth with Factor Immobility



1. Under the assumption of constant commodity prices, if growth occurs in the mobile factor only (left panel) we can see that in overall wages will fall (since overall capital is same and workers are more so MPP_L will fall and hence w will fall). In both X and Y more labor will be employed. Production of both x and y will rise (since there is more labor to employ now) and the MPP_K in both X and Y will rise (as more labor works with the same amount of capital post growth and hence higher productivity of capital). Thus rents in both X and Y will rise. Output of X will rise more than the output of Y though because X is labor intensive. In the long run (when both factors become perfectly mobile) Rybczynski theorem will hold.
2. Under the assumption of constant commodity prices again, if say growth occurs in the immobile factor i.e. K of X then labor employed in X will now have more capital to work with and hence VMP_L in X will rise. This will raise the overall wages and also draw away labor from Y. Now in Y each unit of capital now has less workers to work with so MPP_K in Y will fall and hence the rental will fall. Similarly in X also each unit of capital has less workers to work with so rental in X will also fall. Output of X will increase and that of Y will decrease just as in Rybczynski theorem.

Effect of Tastes in International Trade



1. While growth changes the offer curve due to change in PPF curve, a change in tastes affects a country's offer curve through a change in the country's indifference map. If a country's tastes change against its imports and towards its exports then the volume of the trade will reduce and its ToT will become more favorable (see figure as we move from O_A to O'_A). Similarly if its tastes change against its exports and towards its imports then the volume of will increase and ToT will deteriorate.

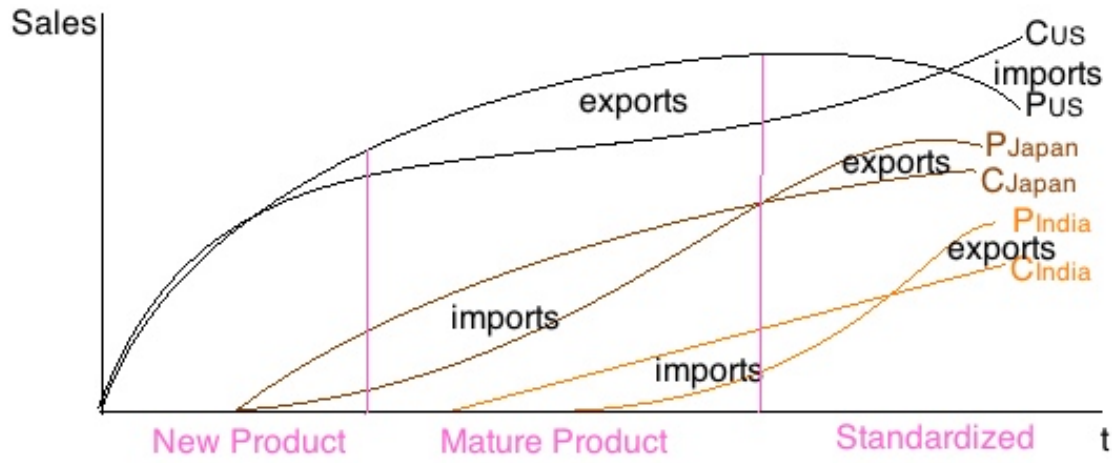
Product Cycle Theory

Assumptions

1. New products are initially developed in rich countries who invest more in R&D. They also have larger markets, proximity to the consumer is required to provide consumer feedback so that product can be modified. Trade is initially based on new technology developed by relatively abundant factors in the industrialized nations (such as human capital and R&D). Subsequently through imitation less developed nations gain comparative advantage based on their relatively abundant factors (vis cheap labor).
2. When a new product is introduced it usually requires highly skilled labor to produce. As the product matures and acquires mass acceptance it becomes standardize. It can then be produced using mass production and techniques needing less skilled labor. Therefore the comparative advantage shifts from the advanced innovator nation to the less advanced nations where labor is relatively cheaper. This may also be accompanied by FDI.
3. The market conditions in the home country differ a lot from those in other countries. The firms developing new products have little information about the other country markets and so develop a new product only for domestic consumption.
4. When other manufacturers arrive on the scene only then the firm is forced to cut costs and hence to mass produce and begins to export.
5. Other countries are slow to catchup.

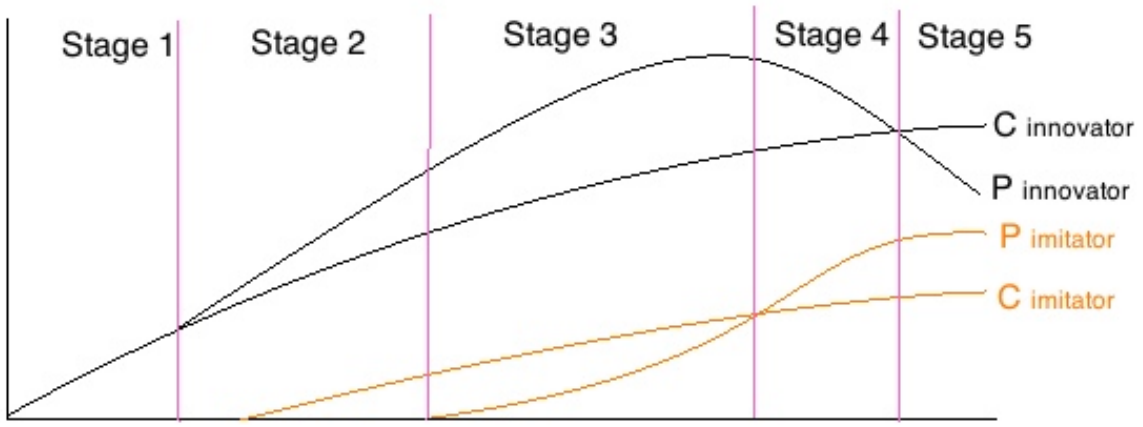
Model

(a) 3 Stage Model



1. New product stage: Given the high costs of developing and launching a product firms innovate considering only the domestic market in mind. So in this the innovating firm is the monopoly. Its main focus is to develop the market for the new product and costs run high. As the product spreads, its demand increases in other countries. Innovating firms starts to ramp up production and export the product to other developed countries.
2. Maturing product stage: There is mass production and lowering of costs of the product. Other firms also come up to produce but the monopoly of the innovating country will depend upon - (a) size and growth of market of importing countries, (b) capacity of importing countries to produce, (c) patents enforcement, (d) economies of scale, (e) nature of the product developed.
3. Standardized product stage: The production is standardized. manufacturing moves into developing countries - often via firms of developed countries establishing subsidiaries in developing countries to exploit cost advantage of the developing countries. Home country becomes net importer.

(b) 5 Stage Model



1. New product phase (stage 1): The product is produced and consumed only in the innovating country.
2. Product growth phase (stage 2): The production is perfected in the innovating country and the production is ramped up to accommodate the increasing demand both @ home and abroad. At this stage there is still no foreign competition so the monopoly of the innovating country continues.
3. Product maturity phase (stage 3): Product becomes standardized and the innovating firm may find it profitable to license other domestic and foreign firms to also manufacture the product. Thus the imitating country starts producing the product but it still remains a net importer though the gap is closing.
4. Product decline phase (stage 4): The imitating country (having lower labor costs) now that the product has become standardized no longer requires the technical skills of the innovator country and begins to undersell it in the 3rd markets thus becoming a net exporter from importer. Production in innovating country declines, brand competition gives way to price competition.
5. Product decline phase (stage 5): Imitating country begins to undersell the product in the innovator country's market as well. Production of the innovator country collapses and it begins to import the product.

Critical Evaluation

1. MNCs, outsourcing and globalization run contrary to it.
2. Firms have information about foreign markets and innovations are made not only for the domestic market.
3. But this theory doesn't run contrary to the comparative advantage and in fact makes good use of comparative advantage.

Strategic Trade Theory

Rationale

1. It argues that a nation can create a comparative advantage through temporary trade protection in technologically advanced and strategically important fields. These high technology industries are subject to high risks, require large scale production to achieve economies of scale and learning by doing, have oligopolist or monopoly character and give rise to external economies when developed. By encouraging such industries a nation can reap the large external economies that result from them. This is similar to the infant industry argument except that it is advanced for the high technology industries.

Profit Matrix	Airbus Produces	Airbus Doesn't Produce
Boeing Produces	(-10, -10)	(100, 0)
Boeing Doesn't Produce	(0, 100)	(0, 0)

Flaws

1. It is difficult to identify winners i.e. industries which will provide large external economies in future and then to devise appropriate policies to successfully nurture them.
2. Most nations are likely to undertake such policies at the same time thus negating the effect. It is an example of beggar thy neighbor policy and is less likely to succeed outside the books.

Terms of Trade

Net Barter (or Commodity) Terms of Trade
(a) Measurement

1. It can be given as P/P_m where x and m are exported and imported commodities respectively. However to measure changes in ToT, we need to take ToT = $(P_{x,t}/P_{x,0}) / (P_{m,t}/P_{m,0})$.

(b) Limitations

1. Doesn't account for changes in product quality.
2. Doesn't tells us the reasons of changes in price.
3. Neglects capacity to import i.e. a fall in export prices also leads to increase in export volume which may overall create a higher import capacity.
4. Ignores productive capacity i.e. if productivity increases ToT will decline but it is a good thing.
5. It ignores gains from trade accruing to nationals as an improvement may be cornered away by the MNCs.

Gross Barter Terms of Trade

1. It is measured in quantity as against price in net ToT.

Income Terms of Trade

1. ToT_y = Index of Export Prices * Export Quantity / Index of Import Prices. It can capture import capacity.

Single Factor ToT

1. $S = (P_x/P_m) * Z_x$ where Z_x is the productivity index of its export sector and
2. S measures the amount of imports the nation gets per unit of domestic factors of production embodied in its exports.

Double Factor ToT

1. $D = (P_x/P_m).(Z_x/Z_m).100$ and it measures how many units of domestic factor embodied in the exports are exchanged per unit of foreign factors embodied in its imports.

Factors Affecting Terms of Trade

1. Reciprocal demand: If demand for A's export is inelastic then A will benefit and so on.
2. Change in factor endowment: Increase in abundant factor worsens ToT.
3. Change in technology: If T increases production of exports, ToT will worsen.
4. Change in demand: If A's demand for X (its exports) increases ToT will become more favorable to A.
5. Economic growth: Same as above.
6. Tariffs and quotas.

Trade as an Engine of Growth
Limitations of Trade in Facilitating Growth

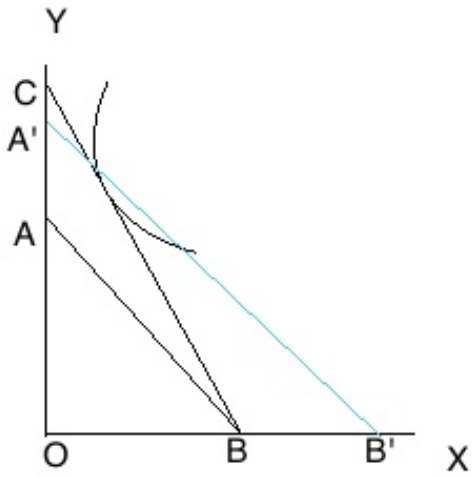
1. Demand for food and raw materials today is growing much less rapidly than was the case in earlier centuries. Thus while trade was able to act as an engine of growth for them it is no longer possible. The reasons for this decline are - (a) Income elasticity of food < 1. (b) Technology is creating substitutes for natural raw material products and/or reducing the amount of raw materials needed per unit of output. (c) Services have grown in share which need less raw materials. (d) Developed countries today are imposing restrictions on trade while in the previous centuries colonies couldn't impose any barriers.
2. While trade based on comparative advantage may maximize welfare in SR, developing nations believe that this pattern of specialization and trade may prevent them from reaping the dynamic benefits of industrialization in the LR. Thus they believe that via protection they can improve their capital and technology position and enter trade when their comparative advantage has shifted away from primary products to manufactured goods.
3. In any case most of the developed countries today are overpopulated so that they themselves need food grains and other stuff so that little exportable surplus is left for trade to act as an engine of growth. Thus trade can't be relied upon to be the engine of growth.

Contributions of Trade in Facilitating Growth (Endogenous Growth Theory)

1. It can act as vent for surplus and enable small economies to realize economies of scale.
2. It can act as a vehicle for transmission of new technologies and it can also stimulate investment in a country.
3. It can act as an excellent anti monopoly weapon, reduce price distortions and hence promote efficient utilization of resources.

Gains from Trade - Measurement

1. Potential gains (G): It is the difference between the domestic marginal cost ratios of the 2 commodities in the 2 countries in autarky. $(MC_x/MC_y)_A - (MC_x/MC_y)_B$.
2. Actual gains (G_a): It is the difference between the domestic price rations of the 2 commodities in the 2 countries in autarky. $(P_x/P_y)_A - (P_x/P_y)_B$. Under perfect competition both are equal.



1. Ricardian method: To him we should extend the original price line parallely outwards until we intersect the new equilibrium point. Thus to him BB'/OB were the gains from trade. Then Malthus changed it to one needed just to touch the same indifference curve.
2. Modern approach: We break gains from trade into gains from consumption and gains from specialization.

Factors Affecting Gains from Trade

1. Difference in cost ratios.
2. Reciprocal demand.
3. Terms of trade.
4. Productive efficiency.
5. Nature of commodities traded.
6. Size of the country: A large country will gain less and small country will gain more.

Theories of Under Development in an Open Economy
Prebisch - Singer Model

1. Their belief was that international trade leads to worsening of (commodity) ToT for the developing nations. This was based on the data published by UN showing that £ ToT improved from 100 in 1870 to 170 in 1938.

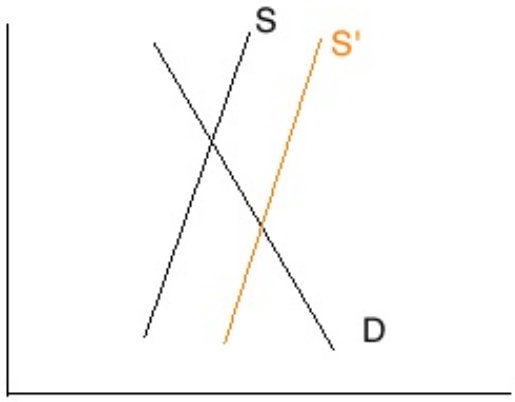
(a) Assumptions

1. Engel's law: As Y rises, the demand patterns shift away from primary to manufactured goods. Thus income elasticity of primary goods < income elasticity of manufactured goods.
2. Elasticities of supply in primary products is lower than manufactured products.
3. DCs' export markets are monopolistic while LDCs' export markets are in perfect competition.
4. Trade unions are weak in LDCs.
5. Technological changes constantly evolve substitutes for primary products.
6. Capacity to import is the measure of economic strength and ToT are most important determinant of import capacity.

(b) Model

1. Elasticity argument: Developed countries have higher price and income elasticities. So if world income goes up by 1%, developed countries benefit more. Similarly if prices go up by 1%, developed countries benefit more. Also because their supply elasticities are low they are unable to take advantage of business cycles. Hence they suffer during cyclical swings.
2. Technology argument: Technological changes eliminate the market for primary products which are the traditional exports from developing countries. Thus there is a systematic synthetic substitution and worsening of ToT for LDCs. As a result of technology developments there is a shift towards lower isoquants i.e. less raw materials used by DCs in their manufactured products.
3. Transfer of benefits argument: Developing countries exports are usually labor intensive. But labor unions are weak in developing countries. So if there is any productivity enhancement, the share which flows to labor in the developing countries is very less and most of it is passed on to the developed countries in terms of cheaper price.
4. Monopoly argument: DCs having monopoly in their export markets can charge higher prices for it while LDCs can't.
5. Foreign investment argument: MNCs take away all the profits and exploit resources.

(c) Export instability problem of developing countries



1. Apart from the secular deterioration of ToT developing countries also face large SR fluctuations in their export prices and earnings. This is due to the inelastic and unstable nature of both demand and supply of their exports.
2. Demand for primary products is price inelastic because individual households in developed countries spend only a small part of their income on such products. So that when the prices of such products change they don't significantly alter their consumption. Demand for raw materials is inelastic because of lack of substitutes fofr many of them. And the demand is unstable because of the business cycles in the developed countries. The net result is a magnification in the price changes of primary products.

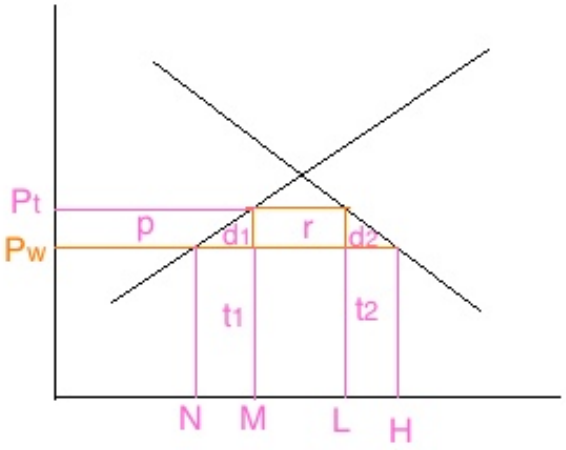
(d) Criticism

1. The study leaves out the quality improvements in £ exports. It is well known that quality improvements in manufactured goods are higher than in primary goods.
2. The study ended in a depression year when the price of raw materials was abnormally low.
3. The data used FoB prices for UK exports and CIF prices for imports. Naturally the decline in ocean transportation costs and insurance costs would reduce the prices of imports only and not exports.
4. Not all raw materials are same and hence can't be expected to move together. For instance ToT of oil producers have gone up.
5. LDCs also export manufactured products and DCs also export primary goods. So a generalization should be avoided.
6. Monopolistic markets in DCs not supported empirically.
7. Engel's law may be applicable to food but not to other raw materials.

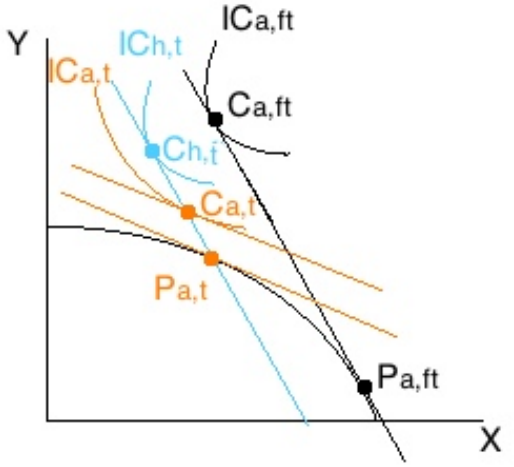
Q. "There is a general deterioration in the terms of trade of the developing countries vis-a-vis the developed countries." Comment upon the statement. (2006, I, 20)

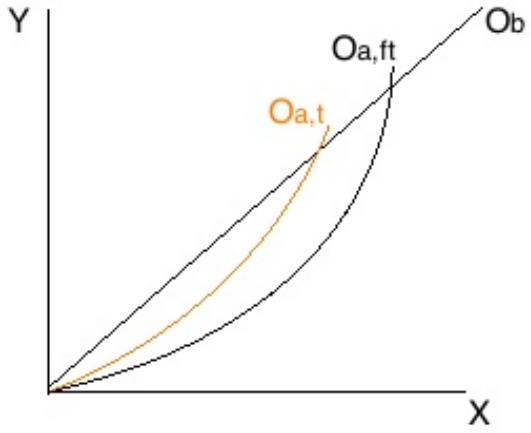
Tariffs and Quotas

Effects of Import Tariff - Small Country



1. Consumption effect: Loss in consumer surplus due to tariff = p + d_1 + r + d_2. Consumers will move up the demand curve and lose as they consume less (OL instead of OH) and @ higher price (P_t instead of P_w).
2. Production effect: Gain in producer surplus due to tariff = p. Producers will be able to sell more (OM instead of ON) and at higher price (P_t now instead of P_w)
3. Trade effect: Trade will reduce by t_1 + t_2.
4. Revenue effect: Revenue will increase by r. This revenue is a transfer from consumers to the government and doesn't change national income.
5. Dead weight loss: d_1 + d_2 is the dead weight loss or the excess burden of the tariff.

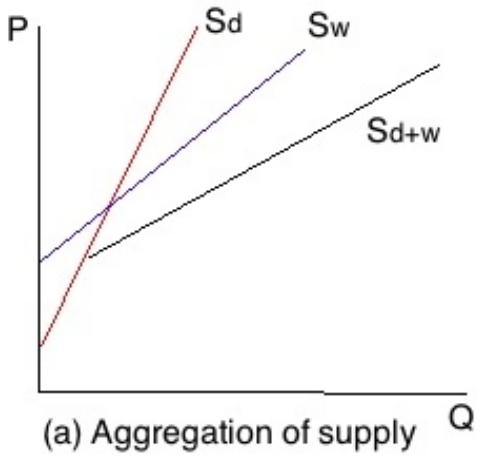


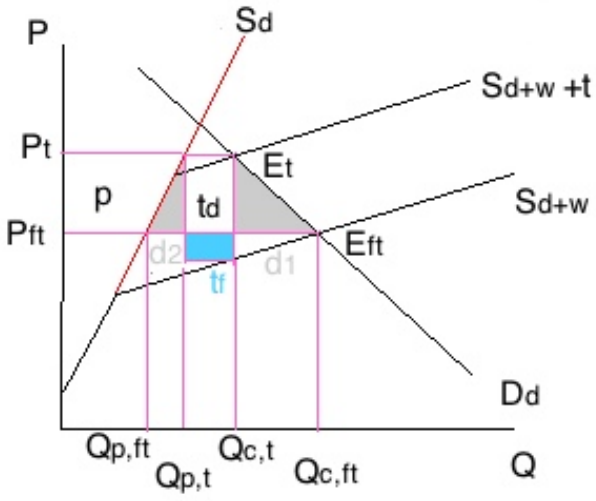


1. If we look at the PPF figure, let $P_{a,ft}$ and $C_{a,ft}$ be the actual production and consumption points in free trade. Now the small country imposes a tariff on imports of Y. This will lead to a rise in domestic price of Y and hence the domestic price line will become flatter (slope = P_x/P_y) so the actual production point under tariff will be $P_{a,t}$ where the country produces more of Y and hence less of X.
2. Welfare effects of tariff: But since it is a small country, it can't change world prices. So trade will still occur on the world price line (in blue) so one would assume that the new consumption indifference curve will be $IC_{h,t}$ and consumption will happen @ $C_{h,t}$. But this is not the case because this is not the domestic price line for domestic consumers. Consumption will take place @ $C_{a,t}$ where the consumption indifference curve ($IC_{a,t}$) is tangent to the domestic price line and the intersection point lies on the world trade line. This is $C_{a,t}$. The welfare loss from $IC_{a,ft}$ to $IC_{h,t}$ is due to inefficient production induced by the tariff. The welfare loss from $IC_{h,t}$ to $IC_{a,t}$ is because of inefficient consumption induced by the tariff.
3. Offer curve: Due to tariff and the consequent higher prices to consumers it can be seen that the volume of the trade will go down i.e. the country will be willing to offer less of X (exports) for same amount of Y (imports). So the offer curve of the country will shift inwards. But the country is small and it will be unable to influence the

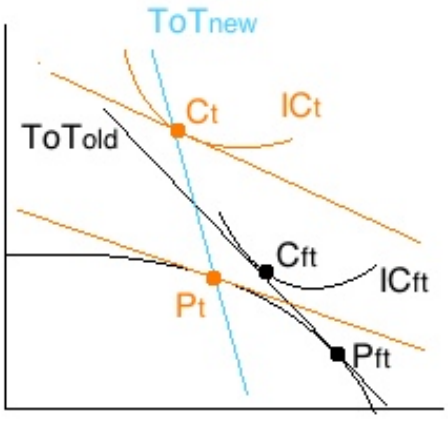
world prices. Hence ToT remain unchanged.

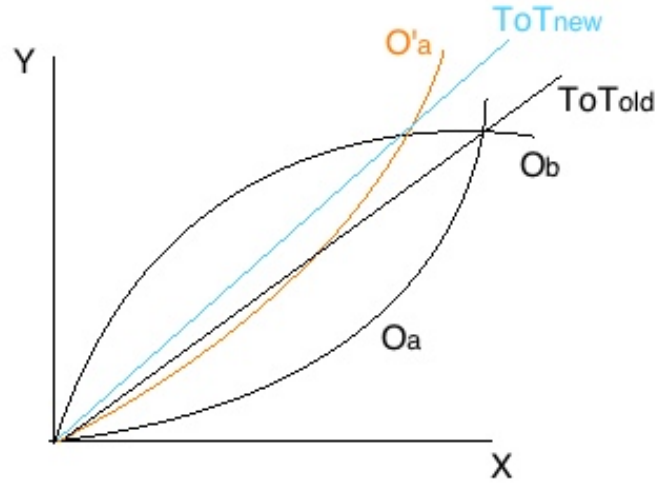
Effects of Import Tariff - Large Country





1. When a small country imposed a tariff we assumed that the world prices remained same. But when a large country imposes a tariff we cannot assume the same because the fall in demand (due to higher prices post tariff) will affect world demand significantly and lead to a fall in world prices.
2. Let the initial equilibrium be @ E_{ft}. @ this the domestic quantity produced is $Q_{p,ft}$ and quantity consumed is $Q_{c,ft}$ and thus quantity imported = $Q_{c,ft}$ - $Q_{p,ft}$ and price was P_{ft}. Now the government imposes a tariff Δt. New equilibrium is @ E_t where quantity consumed is $Q_{c,t}$ quantity produced domestically is $Q_{p,t}$ and thus quantity imported is $Q_{c,t}$ - $Q_{p,t}$ and domestic price prevailing is P_{tariff} out of which Δt is tariff.
3. <u>Effects of tariff:</u> Gain to domestic producers is area p, dead weight loss is $d_1 + d_2$, burden of tariff on domestic consumers is t_d and burden of tariff on foreign producers is t_f. Now because foreign producers are made to pay a part of the tariff means they are selling goods for cheap means terms of trade for the large country have improved. In other words imposition of the tariff increases the ToT of the imposing nation and the steeper or the less elastic the offer curve of the other nation, the larger the gain in ToT for the tariff imposing nation. The ratio of additional price paid by the domestic consumers to price cut taken by foreigners will depend on the price elasticity of supply of the foreign and domestic producers combined and the price elasticity of demand by the domestic consumers. Apart from this tariffs will have distributional effects where according to Stopler - Samuelson theorem the owners of factors of production of the factor more intensively used in the good will be rewarded and the owners of the scarcer factor will be worse off.
4. <u>Gains to world:</u> But note that world overall would have lost because the tariff gain (t_f) to the large country is the loss to the world and apart from this the large country suffers a loss ($d_1 + d_2$). Anyways also note that optimum tariff rate for a small country will always be zero.



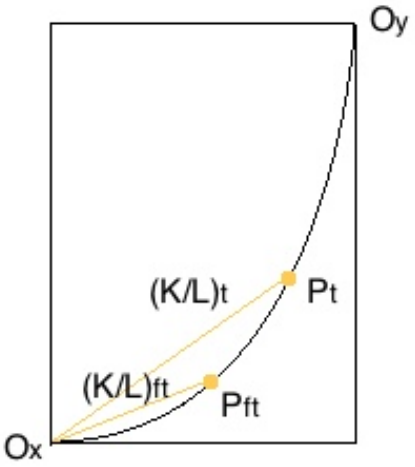


1. In the PPF figure let the initial production and consumption points in free trade be P_{ft} and C_{ft} respectively and community consumption is @ IC_{ft} indifference curve. Now a tariff is imposed on imports of Y. As the tariff is

imposed domestic price of Y rises so the domestic price line flattens. But due to rise in domestic prices domestic consumers will begin to consume less. Since this is a large country, this will dampen the world demand and will reduce the world prices of Y. So new world price line (ToT_{new}) will be steeper than the old world price line (TOT_{old}).

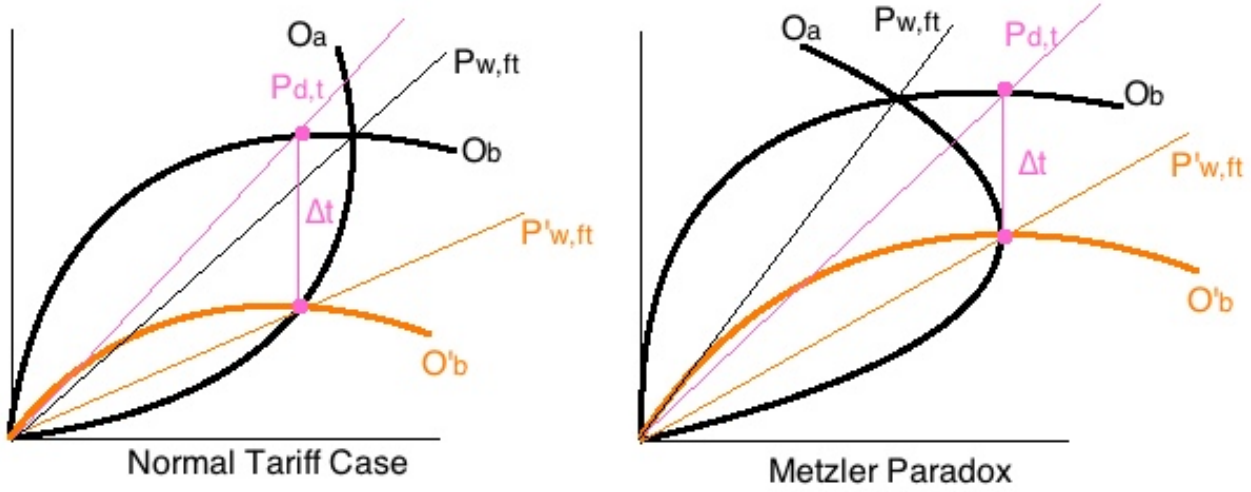
2. Welfare effect of tariff: As can be seen in the PPF figure depending upon the improvement in ToT (which in turn will depend upon price elasticity of domestic demand of Y and price elasticity of world supply of Y) the community may actually reach a higher indifference curve (IC_t). But note here that the production effect of the tariff will still be negative and the consumption effect will always be positive and if it is large enough to offset the negative production effect, overall effect of tariff on welfare may be positive.
3. Offer curve: As proved earlier volume of trade will contract but the ToT will improve.

Stopler Samuelson Theorem for Tariff in a Large Country



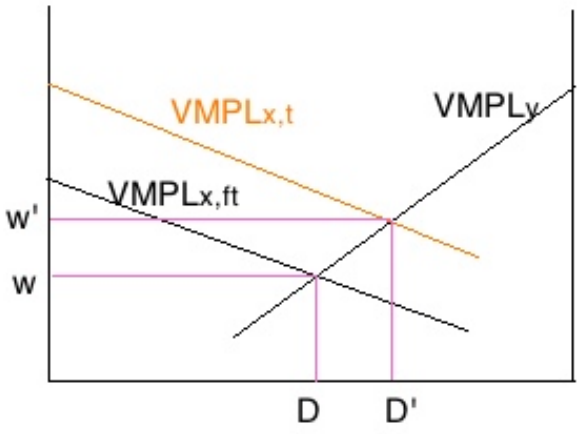
1. When a capital rich country imposes a tariff on the labor intensive commodity (X) the price of X increases and that of Y decreases. So its production of X increases and that of Y decreases. Because the release of resources from Y consist of more K and less L and additional production of X needs more L and less K, so the relative abundance of K increases in the economy and firms switch to higher K/L ratio. This implies according to Stopler - Samuelson theorem that the owners of the abundant factor suffer and scarce factor gain.

Exception to the Stopler Samuelson Theorem for Tariff in a Large Country - The Metzler Paradox



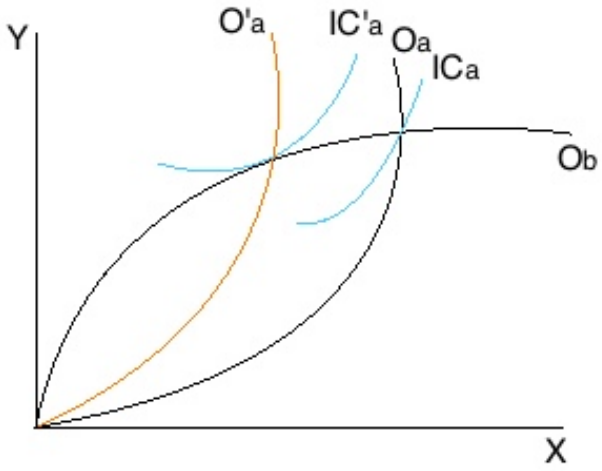
1. This occurs when due to the tariff imposition the domestic relative price of X decreases instead of increasing. It can be seen in above right panel that this happens when the offer curve of the other country is backward sloping i.e. negative elasticity. In such a case we can see that even after adding the tariff (Δt) to the world price we end up with a lower price of the commodity. So Stopler Samuelson theorem will no longer hold as it will encourage production of Y and thus will increase the rewards for capital - opposite of what is predicted by the SS theorem.

Short Run Effect of a Tariff on Factors' Income



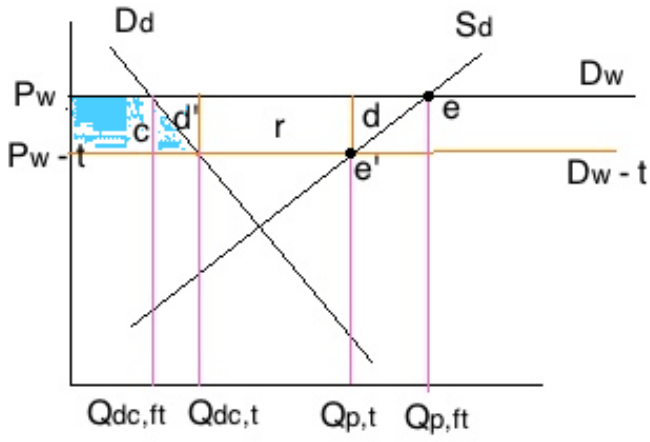
1. SS theorem predicts the LR effect when all factors are mobile between the industries. In the SR however, L is mobile while K is not. Lets assume the capital abundant country imposes a tariff on the labor intensive commodity (X). So price of X will go up in domestic market (assuming normal case).
2. This increases $VMPL_x$ since (VMPL = P * MPPL). As we can see in the above figure this increases the equivalent wage rate (w to w') and amount of labor hired in production of X and decreases labor in Y. This will decrease the $VMPK_y$ because now each unit of capital in Y will have less labor to work with. So rental of capital in Y will decrease. In X, each unit of capital will now have additional labor to work it so $MPPK_x$ will rise and $VMPK_x$ will rise even more (due to rise in P_x as well). So rental of capital in X will rise. For the labor the real income will decrease in terms of X and will increase in terms of Y so the net effect will depend on the relative consumption of X and Y.

Optimum Tariff for a Large Country



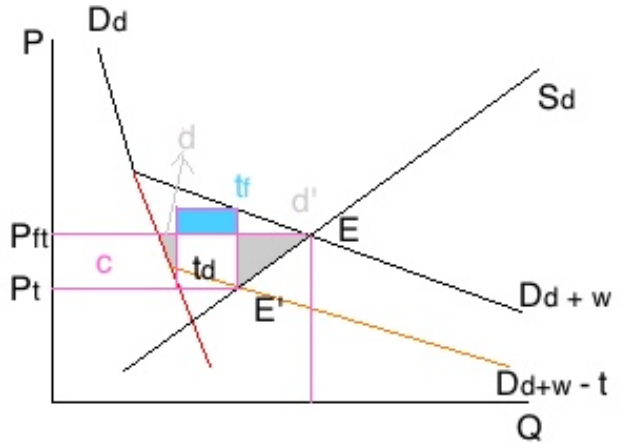
1. If benefits from improved ToT (area t_f) > dead weight loss ($d_1 + d_2$) then net welfare of the country would have increased. So optimum tariff is the tariff which maximizes ($t_f - d_1 - d_2$).
2. From an analysis of offer curve above it is clear that A's maximum possible benefit can occur @ the point where its trade indifference curve is tangent to the offer curve of B. The trade indifference map of the country reflects its welfare states. In the above figure, IC'_a is tangent to the offer curve of the other nation (O_b). So this is the highest possible indifference curve attainable via trade because any curve to its right will be a lower welfare curve and any curve to its left cannot be achieved via trade. So optimum tariff would be the one which would intersect O_b @ the point where IC'_a is tangent to O_b. Slope of IC = -(change in what A is willing to import per unit change in its export). @ point of tangency $(MRS_{x,y})_A = (MRTS_{x,y})_B$ and A's welfare is maximized. If it were greater it means to remain on the same utility A would need to import more Y than what B is willing to offer. So any deviation from it will lead to loss of welfare for A.
3. Optimum tariff (t*) = 1/(e - 1) where e is the elasticity of the offer curve of the other country. Note that if our country is small, other country's offer curve is a straight line and hence e --> infinity and thus t* = 0. But for a large country the less elastic the offer curve of the other country be the higher the optimum tariff.

Effects of Export Tax - Small Country



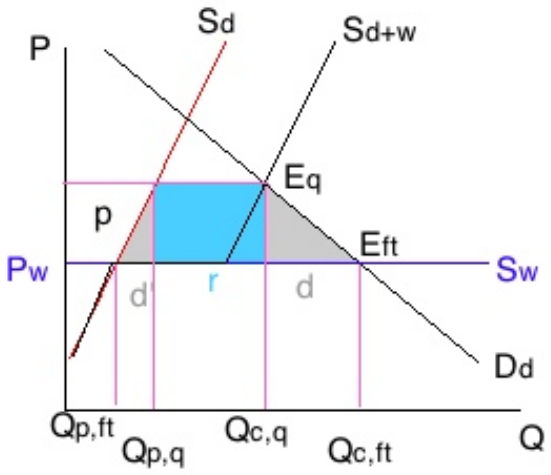
1. Let initially we be @ e where P = P_w and domestic consumption was $Q_{dc,ft}$ and production was $Q_{p,ft}$ and so exports were $Q_{p,ft} - Q_{dc,ft}$. Now an export tax is imposed. Domestic producers still receive the world price P_w from the foreigners but they must pay t to the government so that net price to them is $P_w - t$. Since product is homogenous, they will supply in the domestic market until the domestic prices are equal to $P_w - t$. So we move from e to e' and the domestic consumption is $Q_{dc,t}$ and production is $Q_{p,t}$ and exports are $Q_{p,t} - Q_{dc,t}$.
2. Effects: Gain to consumers is the are c, loss to producers is c + d + d' + r. Gain to government is r. Thus net dead weight loss is d + d'.

Effects of Export Tax - Large Country

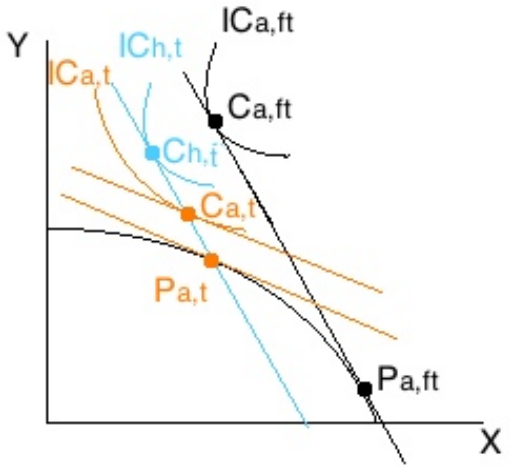


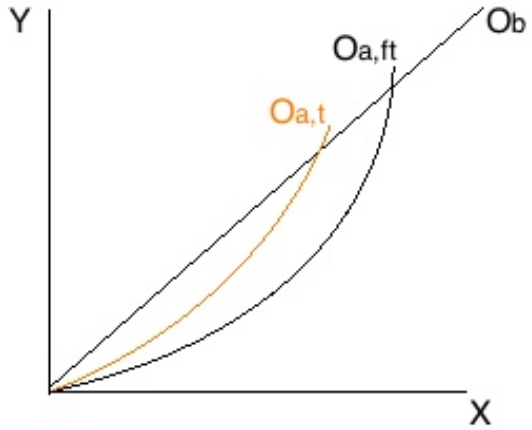
1. Imposition of an export tax will lead to a fall in prices received by the domestic producers (as a part now goes to the government). So they will reduce their output (we move from E to E') but because this country is large, it will lead to a fall in world supply as well and hence increase the world prices of the product. Domestic consumers on the other hand will benefit from lower prices.
2. Here note that the gain to consumers is c, revenue to government from domestic producers is t_d, revenue to government from foreign consumers is t_f, loss to domestic producers is c + d + t_d + d' and thus the dead weight loss is d + d' - t_f.

Effects of Quota - Small Country



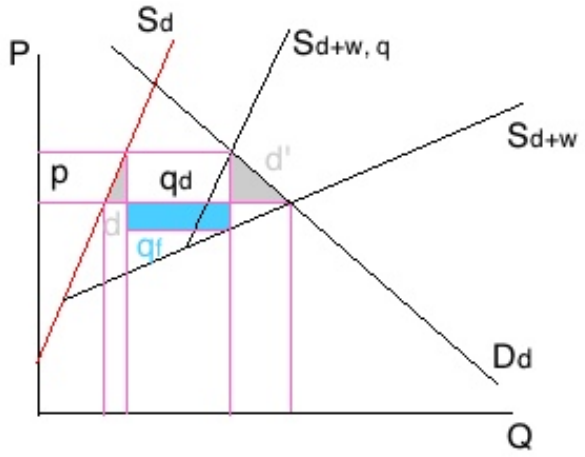
1. Let initial equilibrium be @ E_{ft} where consumption is $Q_{c,ft}$ and domestic production is $Q_{p,ft}$ and thus imports are $Q_{p,ft} - Q_{c,ft}$. When quota is imposed ($Q_{c,q} - Q_{p,q}$) the domestic prices will go up (but will not impact world prices as this is a small country) and the consumption will fall. We move to E_q where the consumption is $Q_{c,q}$ and domestic production is $Q_{p,q}$.
2. Welfare effect of quota: Gain to domestic producers is p, loss to consumers is p + d + r + d'. Dead weight loss is d + d'. The rent r can go to importers, government, domestic producers or foreign producers or even dead weight loss to the society depending on the implementation of quota. If the importers have monopoly power in the domestic market and world market has multiple sellers they can buy from the world market @ P_w and sell domestically @ higher prices thereby capturing r. But if the government auctions import quota licenses then the area r will go to the government in the form of auction bids. If domestic market is perfect competition then importers will have to sell it to the producers @ P_w who will then charge higher prices in the domestic market. Alternatively it can be a dead weight loss if useless lobbying costs etc. are incurred to the extent of the rent r for obtaining import quota licenses.



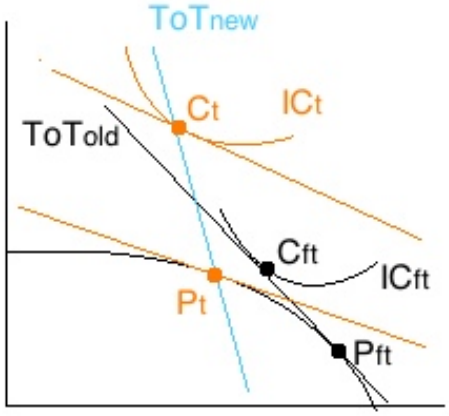


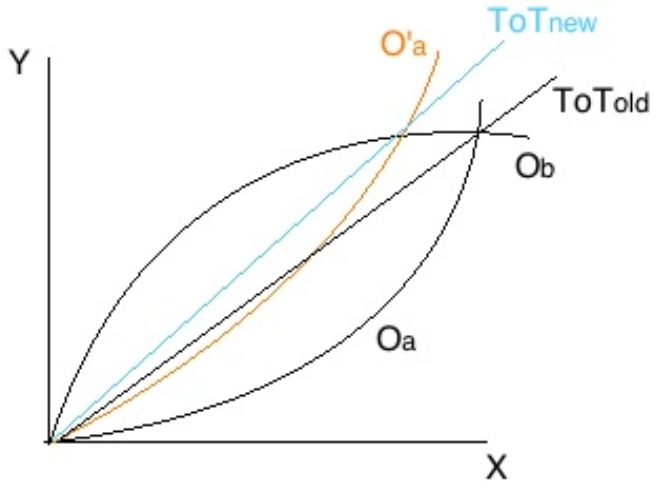
1. Explanation same as the case of tariff.

Effects of Quota - Large Country



1. Here on the imposition of quota the domestic prices of Y will go up. But the international prices of Y will fall because the international producers will now be facing less demand. So q_f represents their loss. Rest analysis same as that of tariff.

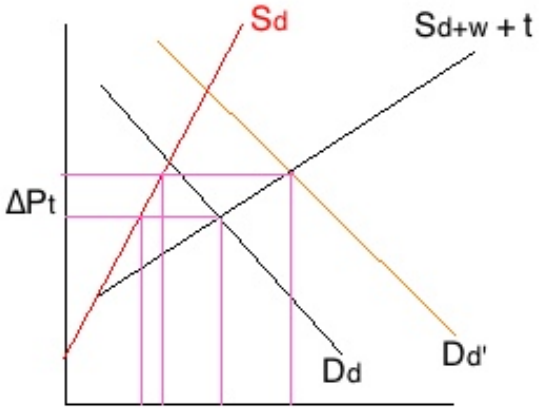


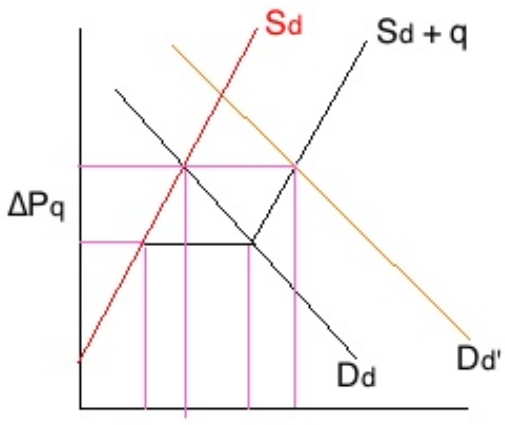


1. Analysis same as that of tariff. The country may gain due to improvement in ToT.

Tariff vs Quota

1. <u>Equivalence:</u> Given a tariff it is always possible to find an equivalent quota such that P and quantity imported are same. Similarly given a quota it is always possible to find an equivalent tariff. This is the tariff - quota equivalence.





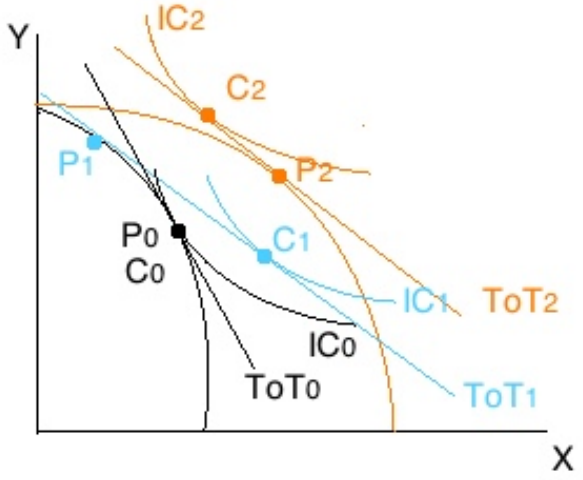
1. Effects of changing market demand: The equivalence holds only @ a particular point. As market demand grows the equivalence is disturbed. This is because under the tariffs the consumers have an option of switching to imports if P_w + tariff < P_d. But in quota there is no such flexibility. In this way quotas increase monopoly power. In the figure above it can be seen that under tariffs (left panel) the quantity imported increases as market demand increases (this is because S_{d+w} will always be flatter than S_d) and thus the change in price (ΔP_t) is less. But under quotas consumers can't import additional quantity and thus change in prices (ΔP_q) will be higher for same demand curve.

Effective Rate of Protection

1. In a completely free trade scenario let the price in world markets of a commodity be P_w. Let a be the fraction of imported inputs in it such that domestic value added be (1 - a).P_w. Now lets say the government impose a tariff of t_f on the product and t_i on the raw materials.
2. This means the maximum price of the product can go up to P_w.(1 + t_f). But the imported raw material content will be now a.P_w.(1 + t_i) so that the domestic value added can go up to maximum price - imported raw material content i.e. P_w.[1 + t_f - a - a.t_i). Since initial DVA was (1 - a).P_w so the % increase allowed or the effective rate of protection is P_w.[1 + t_f - a - a.t_i -1 + a]/ [P_w.(1 - a)]. This can be rewritten as ERP = (t_f - a.t_i) / (1 - a).
3. Thus if t_f = t_i then ERP = t_f. If t_f> t_i then ERP > t_f and if t_f< t_i then ERP < t_f.

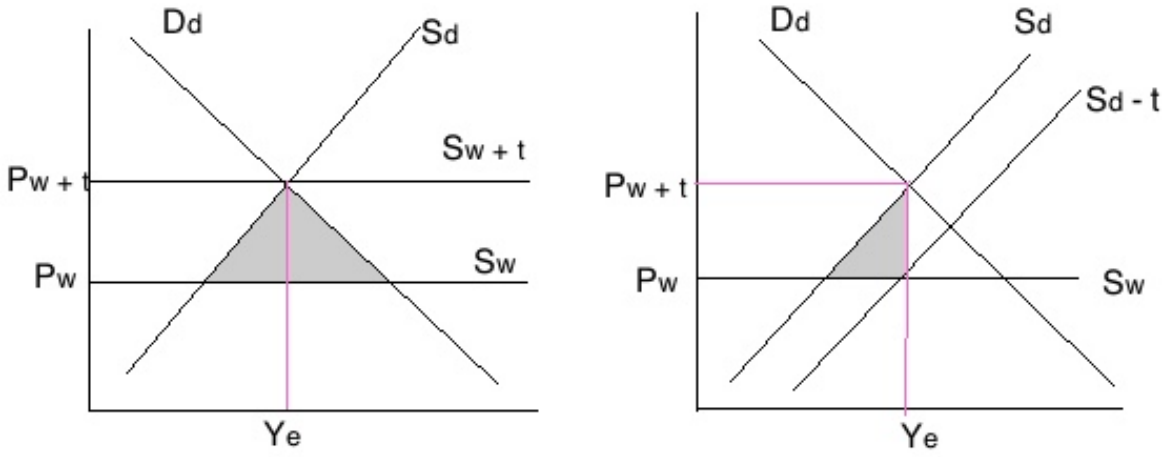
Arguments and forms of Protection

Infant Industry Argument



1. Let international terms of trade be ToT_2 = ToT_1. In free trade the country would have operated @ P_1 and consumed @ C_1 at a higher indifference curve (IC_1). But the country imposes a tariff and moves to a lower indifference curve in SR (IC_0) and produces and consumes @ P_0 and C_0 respectively which coincide. But due to protection its industry grows and it is able to move to a higher PPF and thus a higher indifference curve (IC_2).

Tariffs vs Subsidy - Infant Industry Argument



1. It can be clearly seen that while tariff and subsidy will lead to same output in this case, dead weight loss caused by the tariff is the are of the 2 shaded triangles while subsidy causes less dead weight loss. This is because while tariff creates inefficiency in both production as well as consumption, subsidy creates inefficiency only in production to the same extent as that of tariff.

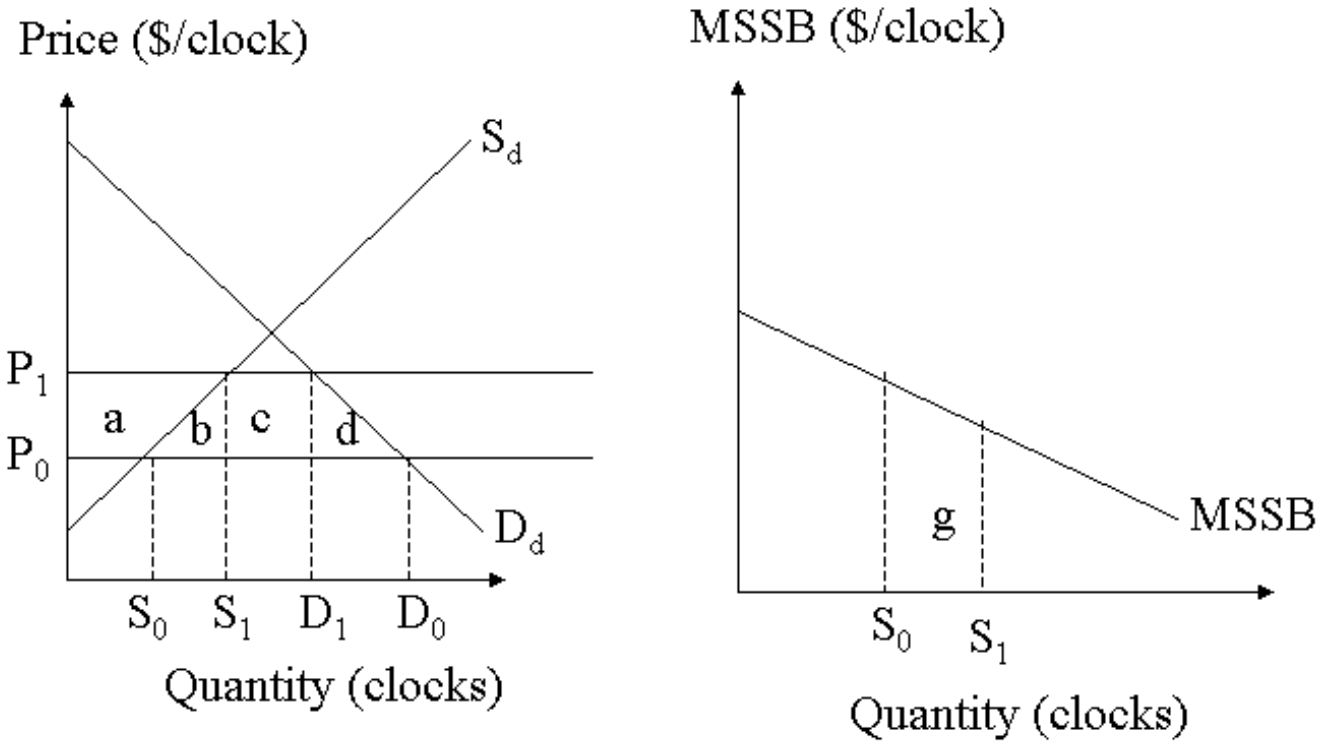
Employment Argument - Limitations

1. Haberler argues that protection can increase employment only when the price elasticity of demand is not too high. Even then it can help only in SR.

Revenue Argument

1. What is the tariff rate which maximizes total revenue?
2. What is the optimum tariff rate?

Tariffs vs Subsidies - Positive Externalities

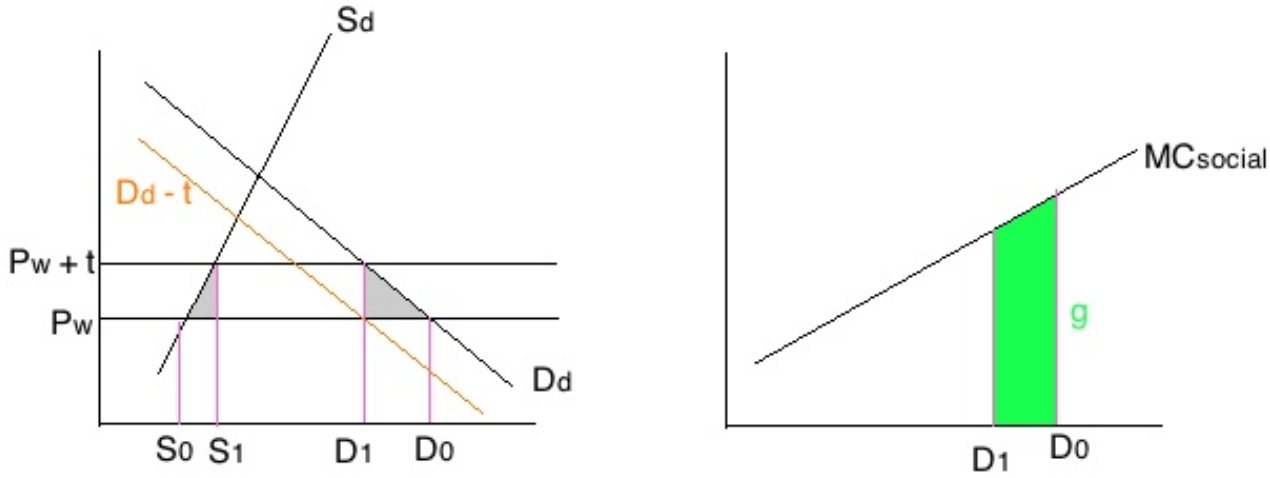


1. The tariff would raise the domestic price from the world price P_0 to P_1. Domestic production increases from S_0 to S_1 and domestic consumption falls from D_0 to D_1. By increasing domestic production from S_0 to S_1, the country gains social side benefits (positive externalities) equal to area g. The tariff causes the usual production and consumption inefficiencies equal to b + d. The net gain or loss to the country is the difference between area g and areas (b + d).
2. With a production subsidy instead of a tariff, the market price remains at P_0. Domestic consumption remains at D_0. Producers receive revenue per unit produced equal to P_1 which includes both the market price and the government subsidy per unit produced. They increase domestic production from S_0 to S_1. By increasing domestic production from S_0 to S_1, the country gains social side benefits (worker training and skills) equal to area g. The

production subsidy causes a production inefficiency equal to area b, but it does not distort domestic consumption. The net national gain or loss to the country is the difference between area g and area b. Thus the subsidy creates a larger net economic gain for the country, because it acts more directly on the source of the incentive distortion.

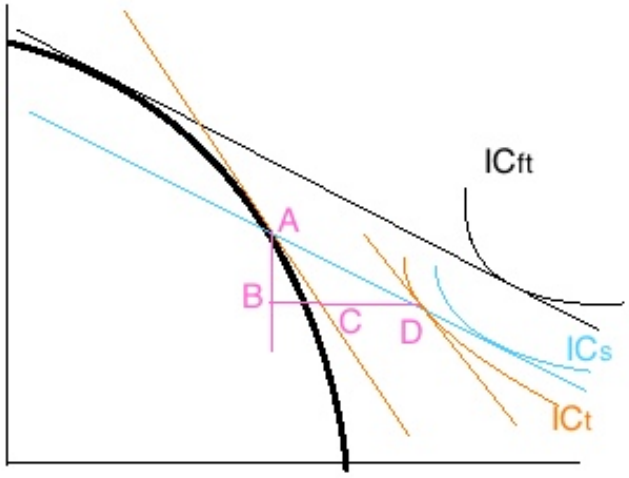
3. The tariff creates revenue for the government equal to area c. The production subsidy creates a cost to the government equal to area (a + b). The deficit-conscious finance minister, looking only at the government budget, would favor the tariff. But the specificity rule indicates that the best policy is to subsidize or support worker training directly.

Tariffs vs Subsidy - Negative Externalities of Consumption



1. In case of a tariff, consumption will go down from D_0 to D_1 (as the price will go up from P_w to $P_w + t$). The social gain will be area g but loss will be the 2 shaded triangles as usual. In case a consumption tax is imposed to bring down the consumption to the same level, social benefit remains the same but loss is just the right shaded triangle. Thus again subsidy is better than tariff.

Tariff vs Subsidy - General Equilibrium



1. Explanation similar to that of a tariff in small country. Here CD is the tariff imposed and collected by the government so that even though the nation on the whole gets BD of X on export of AB, consumers only get BC of X and government appropriates CD.

Q. How is subsidy better than tariff to achieve domestic objectives? (2011, I, 20)

Q. "In the presence of domestic distortions, subsidies are the first best policies and tariffs are the second best." Do you agree? Explain. (2009, I, 20)

Balance of Payments

Purchasing Power Parity

Limitations

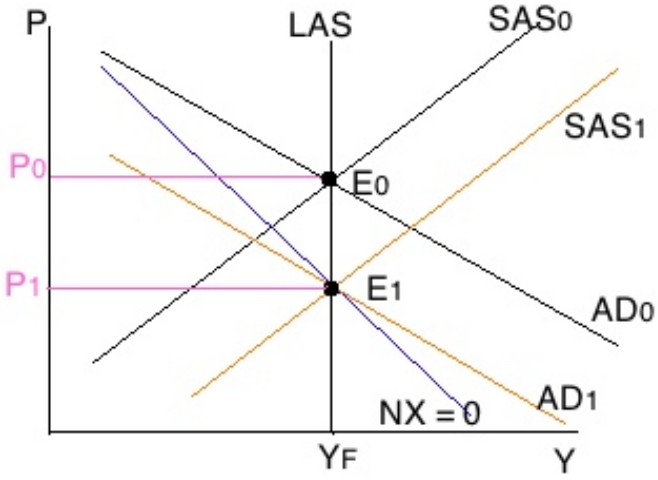
1. It ignores the price elasticities of demand of exports and imports.
2. It ignores capital flows.

Monetary Approach (assumes capital flows): Fixed Exchange Rate

Concept

1. This argues BoP disequilibrium is purely a monetary phenomenon. Disequilibrium in BoP is reflection of monetary disequilibrium and thus can always be corrected by an adjustment in money supply. In an open economy, $\Delta M = \Delta D + \Delta F$ where ΔM is the change in money supply, ΔD is the change in domestic credit and ΔF is the change in fx reserves. Thus if BoP is in deficit i.e. ΔR is negative then money supply should be reduced and vice versa.
2. It relies on the QTM demand equation i.e. $M_d = k.PY$. Similarly for supply of money it relies on the money multiplier equation i.e. $M_s = m.(D + F)$ where m is the money multiplier, D is the domestic component of monetary base or the high powered money and F is the foreign component of monetary base i.e. fx reserves. We assume here that k and m are constants.

Automatic Adjustments



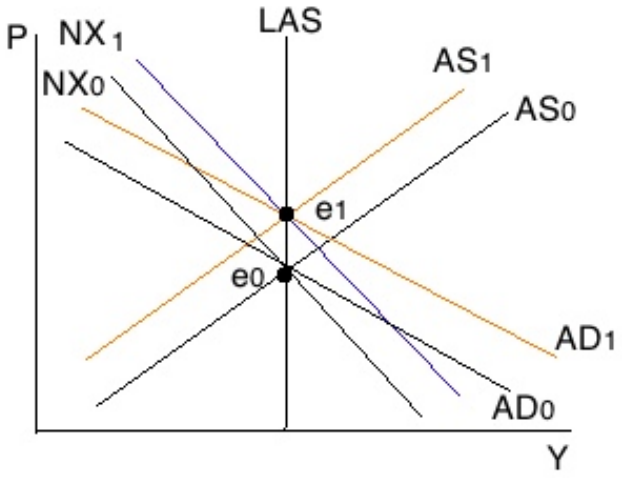
1. Suppose India has BoP deficit @ E_0 i.e. demand for \$ > supply of \$. Let initial AD curve be AD_0 and let NX = 0 line be as shown. NX line will be steeper than AD line because as income rises imports are higher and hence the gap between NX and AD lines increases. Let SR supply curve be SAS_0 and LR supply curve be LAS. This BoP deficit is because of excess money supply which forces the consumers to spend more and hence higher imports and less exportable surplus.
2. Since demand for \$ > supply of \$, so INR would tend to depreciate. RBI will have to intervene (to keep the fx rate fixed) and will have to meet the excess demand for \$ by selling \$ in the market from its reserves. But this selling of \$ would be accompanied by buying INR and thus contraction of reserve money (H). This will reduce the money supply (assuming RBI doesn't sterilize its operations).
3. The fall in money supply will lead to a fall in AD (M = k.PY) and it will shift left (from AD_0 to AD_1). Fall in AD leads to fall in money incomes and hence people will tend to spend less. This will increase exportable surplus and reduce demand for imports. Alternatively, this will reduce the prices (assuming Y constant) which will make economy competitive as export prices will fall and imports will become costlier. Thus economy is stabilized. Also if P don't fall and Y falls then too income has declined and hence imports will decline.
4. Now as prices fall real wages will rise, and so SAS curve will shift to right and the new equilibrium will be @ E_1. BoP would thus balance as well as internal equilibrium will be restored.

Policy Implications

1. Now $M_d = M_s$ in equilibrium. Thus an increase in the demand for money (due to say an increase in GDP level) will be matched by an increase in domestic reserves of foreign reserves. If domestic reserves are not increased then foreign reserves will have to increase via trade surplus (increase in Y without increase in money supply will lead to fall in prices and hence trade surplus) or capital inflows (and to keep the fx rate constant central bank will have to absorb the foreign currency and issue domestic currency). Similarly an increase in domestic money supply without an increase in income will lead to outflow of fx reserves and BoP deficit. Thus under a fixed exchange rate system BoP deficits arise only because the monetary authorities supply more money than demanded and BoP surpluses arise because domestic money supply is less than demanded.

2. Thus it also emerges that the (small) nation has no control over its money supply over the long run under a fixed exchange rate system. Thus inflation etc. are all tied to the world and domestic inflation is exported via an outflow of fx reserves to the rest of the world.

Uselessness of Devaluation in LR

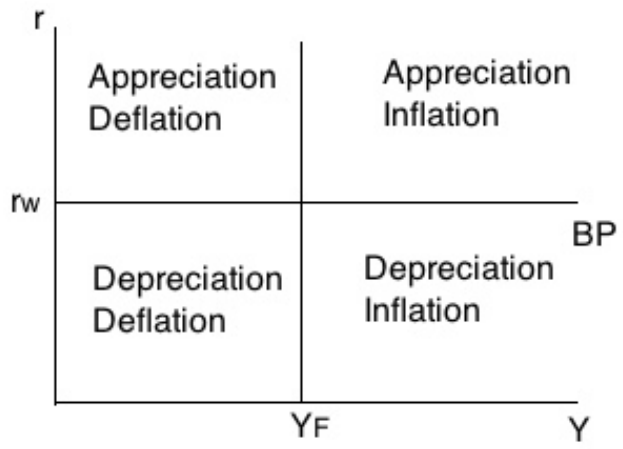


1. Devaluation can improve BoP only in SR and its effect in LR is at best uncertain. As devaluation is made, NX will increase. This will generate BoP surplus which will lead to higher fx reserves. Higher reserves mean higher money supply in the economy ($\Delta M = \Delta D + \Delta R$). Higher money supply means higher AD which means higher prices and income and hence NX decreases again.
2. Let the initial equilibrium be @ e_0. Now because of devaluation the BoP balancing line (NX = 0) will shift from NX_0 to NX_1. So the current point is no longer equilibrium point. Because now NX > 0, there will be BoP surplus. As a result RBI will have to intervene in the market and buy $ and sell INR. But this will lead to increase in money supply and hence AD will increase (from AD_0 to AD_1). As a result of this increase money income increases and people will begin to spend more which will reduce exportable surplus and increase demand for imports. Alternatively this will increase the prices (assuming Y constant) which will lead to our exports becoming uncompetitive. Rise in prices will lead to a fall in real wages and will lead workers to demand higher wages and in the LR the supply curve will shift left (AS_0 to AS_1) and new equilibrium will be e_1. Thus BoP will balance again and devaluation only led to increase in prices and nothing else.

<u>Monetary Approach (assumes capital flows): Floating Exchange Rate</u>

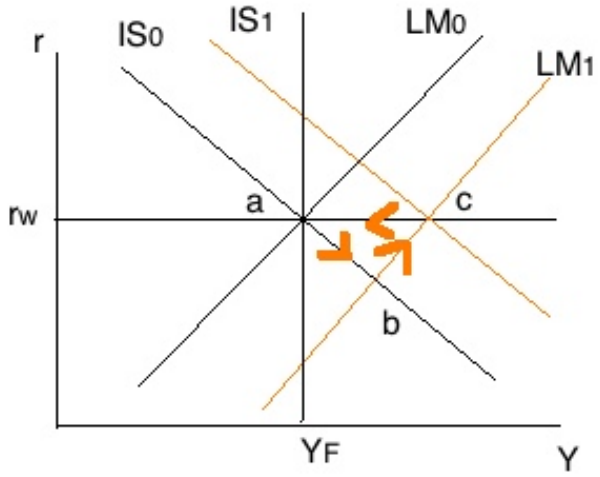
1. Under this the exchange rate movement will depend on the mismatch of money supply and money demanded in the nation as compared to the mismatch of money supply and money demanded in rest of the world. For instance if there is no growth of income and money supply in rest of the world and in our nations monetary authorities print more money than demanded by the increase in income then our currency will tend to depreciate.
2. Thus in such a case nations can pursue an independent monetary policy and domestic inflation will not be transferred via reserve flows but via trade movements. Nations with high inflation will witness a depreciation in their currency.
3. Formally, $M_d = k.PY$ and $M_d^* = k^*.P^*Y^*$ where * indicates corresponding figures in the foreign country. Now $M_d = M_s$ so rearranging we get $(P/P^*) = (M_s.k^*Y^*/M_s^*.kY)$. But absolute PPP theorem suggests fx rate (R) = P/P* so we get $R = (M_s.k^*Y^*/M_s^*.kY)$. Thus an increase in money supply of a nation keeping all other things constant leads to a depreciation (higher R).

Assumptions



1. Small country and full capital mobility. With slight difference in domestic and world interest rates immediate and large inflow of capital. If $r_d > r_w$ then there will be immediate large inflow of K leading to appreciation of domestic currency. This will lead to a fall in NX. On the other hand if $r_d < r_w$ then there will be immediate large outflow of K leading to depreciation of domestic currency. This will lead to a rise in NX.
2. If Y expands beyond Y_F then there will be inflation and if Y contracts below Y_F then there will be deflation. Thus towards the right side of Y_F there will be inflation and to the left side of it there will be deflation.

Effect of Monetary Expansion



1. Let initial equilibrium be @ a where IS, LM and BoP are all in equilibrium. Let the central bank increase money supply. Thus LM curve will shift right (LM_0 to LM_1). Economy will reach b. But @ b $r_d < r_w$ which will cause massive capital outflows and depreciation of currency. Depreciation of currency will cause NX to increase causing IS curve to shift right (IS_0 to IS_1) and new SR equilibrium will be @ c.
2. But @ c, $Y > Y_F$. So there will be inflationary pressures, P will increase. This will decrease the real money balances with the people which will tend to push LM curve up. But when it goes up, r_d becomes more than r_w. So capital inflows occur, currency appreciates, NX decreases, IS curve shifts back. This goes on until Y_F is restored @ a at which everything is same as it was before. Thus monetary policy is entirely neutral.

<u>Portfolio Approach / Asset Market Model (assumes capital mobility)</u>
Portfolio Construction

1. This approach varies from the monetary approach in the sense it assumes money to be just one form of asset in the portfolio of international investors. Their portfolio now comprises of domestic bonds, foreign bonds and domestic money where domestic and foreign bonds are imperfect substitutes of each other. Holding domestic money is risk less but offers no yield. Foreign bonds entail additional risks (cross border, fx risks etc.) than the domestic bonds.
2. Thus we can call M as the demand for domestic money, D as the demand for domestic bonds, F as the demand for foreign bonds. Overall equilibrium exists when each of the individual asset market is in equilibrium i.e. their

supply equals their demand. If any one asset market is disturbed, it may lead to changes in all other markets and hence the exchange rate for the restoration of equilibrium. There are factors affecting each of these markets.

3. Thus M = f(i-,i*-, EA-, RP+, Y+, P+, W+), D = f(i+,i*-, EA-, RP+, Y-, P-, W+), F = f(i-,i*+, EA+, RP-, Y-, P-, W+) where a + sign against a variable indicates that a rise in the variable will lead to a rise in the demand of the asset and - indicates that a rise in the variable will lead to a fall in the demand of the asset. i is the domestic interest rate, i* is the foreign interest rate, EA is the expected appreciation of the foreign currency, RP is the risk premium demanded to hold the foreign bond, Y is the domestic income, P is the domestic prices, W is the domestic wealth.

Portfolio Adjustments and Exchange Rates

1. Suppose domestic central bank engages in OMO to sell domestic bonds. This increases i which in turn leads to increase in D but fall in M and F. This means that foreign bond holdings will fall (and also some foreign investors may sell their bonds and buy our bonds) and hence domestic currency will appreciate. As a second order effect, such a sale of foreign bonds will also lead to a rise i* and purchase of domestic bonds will reduce i and hence work to dampen the effect.
2. Suppose foreign currency is expected to appreciate more than what was earlier expected i.e. EA increases. This will increased F but will reduce M and D. There will be an appreciation of the foreign currency now and a fall in i*. The fall in i* and also the reduction in EA (due to appreciation of foreign currency) will act as a dampener.
3. Thus we see that following an exogenous disturbance there is disequilibrium in BoP. But forces act so as to restore the equilibrium and thus any effect of such exogenous shocks can only be temporary on BoP and it will return to a balanced state.

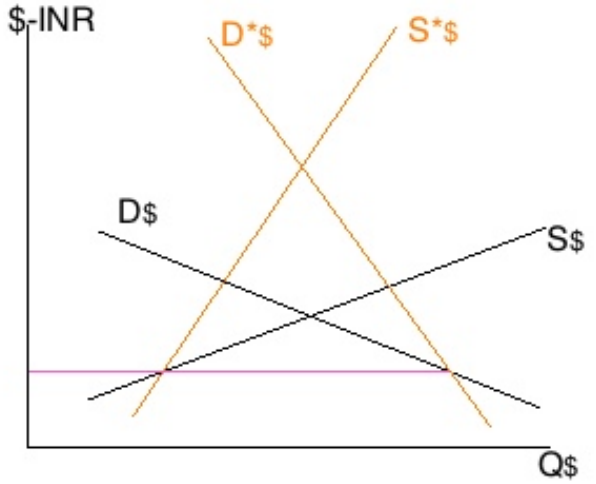
Exchange Rate Overshooting

1. An increase in say domestic money supply reduces i. This increases F and thus domestic currency depreciates. Now assuming all markets were in equilibrium earlier, this stock adjustment can be very large and can take place very quickly. On the other hand the real market flows i.e. the trade flows tend to adjust only slowly. Thus the large stock adjustments overshadow the real adjustments in the SR and it leads to exchange rate overshooting.
2. Note that according to uncovered interest rate parity, i = i* + EA - RP. Now if we increase domestic money supply, then i falls. RP is unchanged and so is i*. This means EA has to fall (i.e. a depreciation of foreign currency is to be expected). But i has fallen so eventually domestic currency has to depreciate (and foreign currency appreciate). Both these things are possible only when immediately the domestic currency depreciates more than the LR level so that people expect it to appreciate slowly. Hence the exchange rate overshoot.

Q. How does portfolio balance approach differ from monetary approach in determining the exchange rate? (2011, I, 20)

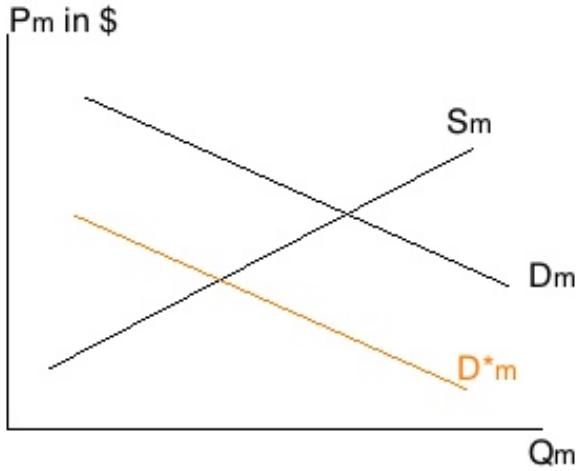
Price Adjustment Mechanism of BoP (assumes zero capital mobility, constant income)

Price Adjustment under Flexible Exchange Rates



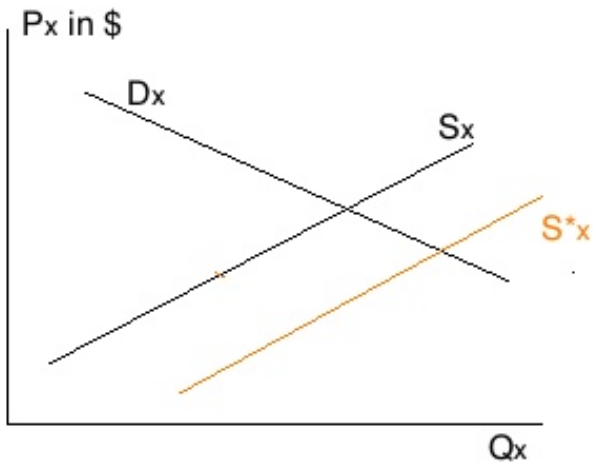
1. It can be seen from above that for a given deficit if the D$ and S$ curves are more elastic then a smaller amount of depreciation can clear the BoP deficit. If however the D$ and S$ curves are less elastic then a larger amount of depreciation is needed to clear the BoP deficit.

(a) Derivation of $ Demand Curve



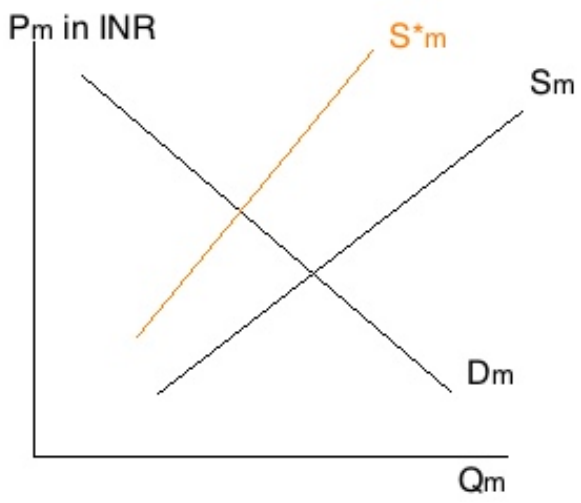
1. When INR depreciates, the demand curve of Indian importers will shift down while the supply curve remains unchanged. This is because with the depreciation for each unit of the imported good Indian importers will have to pay higher amount in INR. It means they will buy less units of imports @ a given price or to buy same quantity of imports they will be willing to pay a lower price. The suppliers of Indian imports i.e. the US exporters have $ economics so their supply curve remains the same. Hence a new equilibrium is reached where India imports less @ lower $ price which will reduce the total quantity of $ demanded and hence the negatively sloped $D_{\$}$ curve.
2. Only in the case when D_m curve is completely inelastic that we will find that $ price will remain exactly the same even after depreciation (and also quantity remains unchanged) so $D_{\$}$ curve will be a vertical line. Thus the $D_{\$}$ curve will always be negatively sloped or be a vertical line.

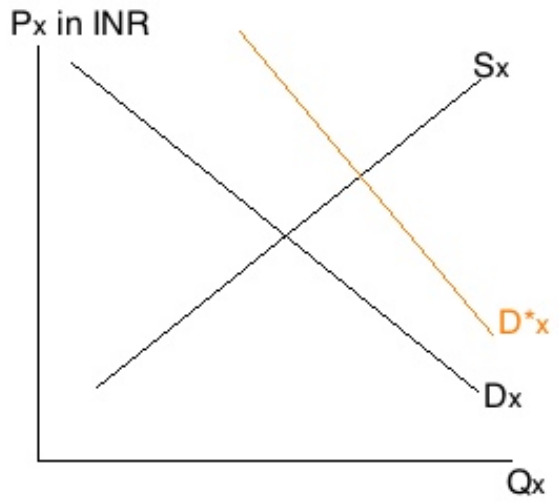
(b) Derivation of $ Supply Curve



1. The supply curve of Indian suppliers is the usual positively sloped curve. If INR depreciates, the supply curve will shift right (while there will be no change in the demand curve by the US importers). This is because every given $ price means higher INR price and because Indian suppliers incur their costs in INR so they will be willing to supply a higher quantity. But as they supply a higher quantity, they will have to lower the $ price as according to the demand curve of the US importers. The net result is they will be selling more @ lower $ price.
2. Now what happens to the overall supply of $ depends on the ($) price elasticity of Dx curve. If the elasticity > 1 then overall quantity of $ supplied will increase and hence $S_{\$}$ curve will have a positive slope. If the elasticity = 1 then overall quantity of $ supplied remains unchanged and hence $S_{\$}$ is vertical. If the elasticity < 1 then overall quantity of $ supplied is lower and $S_{\$}$ curve has a negative slope.

(c) Effect of Fx Rate Changes on Domestic Prices



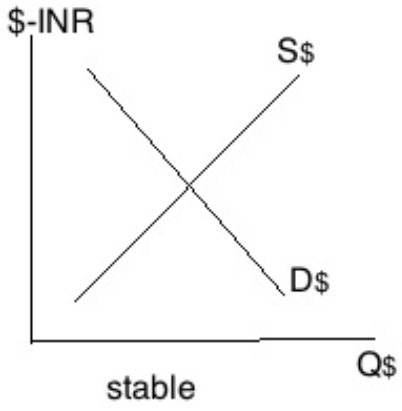


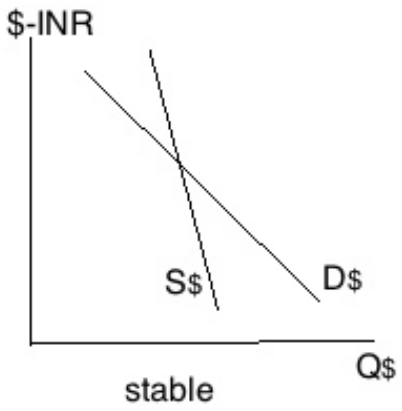
1. We can see that in both the above cases the domestic price (i.e. price in INR) will increase. In the case of imports, a depreciation means every $ is worth more so to keep INR price same $ price decreases. This means the US suppliers would be willing to supply less and hence the S_m curve shifts up left. Similarly in case of Indian exports, a depreciation means $ price will decrease which means @ every given INR price US consumers will consume more and hence the rightward shift in D_x curve.

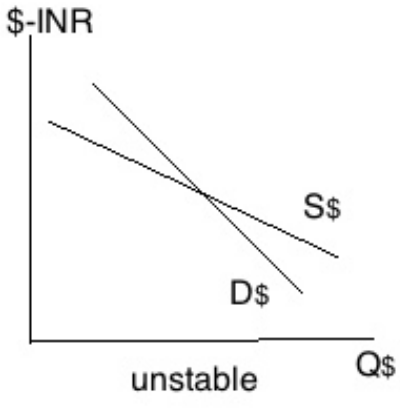
(d) Effect of Fx Rate Changes on ToT

1. Commodity ToT is the ratio of export and import prices in the same currency. Since a depreciation changes the prices of exports and imports in the same currency (say INR) it will lead to a change in ToT. Whether the change is +, flat or - depends on the relative change in the INR prices which in turn depends on the price elasticity of supply and demand curves.

(e) Marshall - Lerner Condition

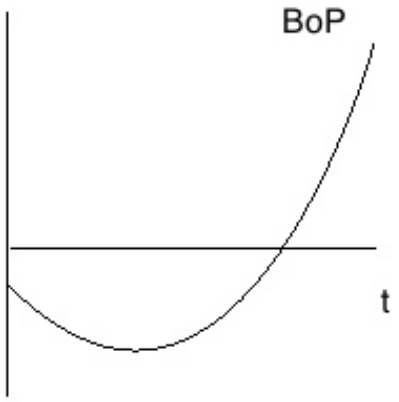






1. This condition tells us whether the fx market is stable or unstable (see figures above - when the $S_\$$ curve is negatively sloping and also is flatter than the $D_\$$ curve we will have an unstable market condition). The M-L condition says that if the sum of the price elasticity of exports (D_x) and price elasticity of imports (D_m) > 1 then the fx market is stable (i.e. a depreciation will clear out BoP deficit). If the sum = 1 then a depreciation leaves BoP unchanged. If the sum < 1 the fx market in unstable i.e. depreciation increases the BoP deficit.
2. Earlier empirical studies indicated that the sum of the price elasticities was either below or very close to 1. But Orcutt pointed out that these studies suffered from identification problem and didn't measure actual elasticities. This is because on a depreciation both D_x and S_x curves will shift (D_x due to change in tastes as argued by him) and the actual observed elasticity will be lesser.

(f) J-Curve Effect



1. Devaluation is likely to worsen the trade for some time before improving. This is because imports and exports are sticky. So after devaluation INR price of imports increases immediately while INR price of exports remains the same. Adjustment is slow in quantities.

(g) Effects of Depreciation

1. Immediately after devaluation import prices in INR terms increase. This is the price effect.
2. As a result of this increased price there is a fall in quantity demanded. This is the quantity effect.
3. For a 10% depreciation we often find that the INR increase in import prices may be < 10%. This is because foreign firms don't want to increase the INR prices and hence try to absorb the price rise as much as possible (so that they don't lose the market share which has been acquired after incurring substantial costs). This is called the beachhead effect.

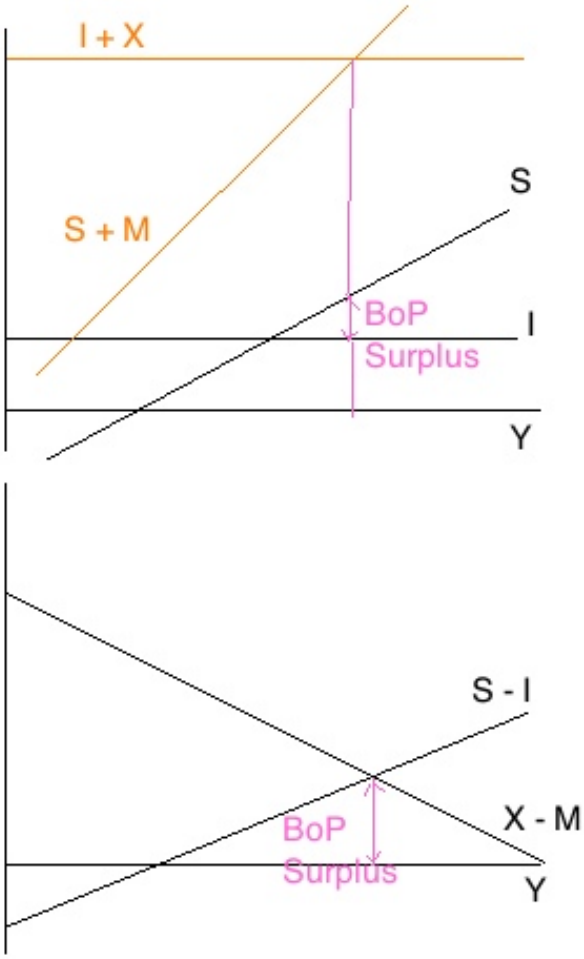
Price Adjustment Under Gold Standard : The Price - Specie Flow Mechanism

1. Since each nation's currency is linked to gold and gold flows out in BoP deficit nations it means that the money supply will reduce for a BoP deficit nation and increase for a BoP surplus nation. Now from the QTM MV = PY. Now V is assumed to be constant and Y is Y_F or the full employment output and hence is constant as well. So any change in money supply will lead to a corresponding change in prices. Thus in a BoP deficit nation, money supply reduces leading to reduction in domestic prices which in turn encourages exports and decreases imports leading to BoP balance.
2. Note that while the price adjustment through currency mechanism relies on the changes in price in foreign currency terms to balance the BoP, the gold standard adjustment relies on adjustment in domestic prices to balance the BoP. Assumption here is of course no sterilization.

<u>Income Adjustment Mechanism of BoP (assumes zero capital mobility, constant prices)</u>

1. We assume here that all prices, wages, interest rates etc. are constant. Also the nations operate @ below full employment level. While the price adjustment theories explained how price changes lead to BoP adjustments, income theories explain how autonomous changes to national income lead to changes (adjustments) in BoP.

Income Adjustments under Fixed Exchange Rates - Small Economy



1. For a small open economy, exports are taken to be exogenous of the level of the income like investment (as they are determined by the income of the rest of the world). So I and X are horizontal lines while S and M are increasing functions of Y. We have the Keynesian identity, injections = leakages or I + X = S + M. Because LHS is constant and RHS is $f(Y)$ we can determine the equilibrium level of Y.
2. Any change in any of these variables will lead to a change in income and a restoration of equilibrium. Thus $\Delta I + \Delta X = \Delta S + \Delta M$. But $\Delta S = s.\Delta Y$ and $\Delta M = m.\Delta Y$ where s and m are the marginal propensities to save and import respectively. Thus the multiplier $k' = 1 / (s+m)$. Any change in autonomous variables will change equilibrium income.

Income Adjustments under Fixed Exchange Rate - Large Economy

1. Let nation 1 be large. An autonomous increase in its exports will have second level effects as well. The multiplier $k'' = 1 / (s_1 + m_1 + m_2 . s_1/s_2)$ which is lower than the multiplier in the small economy. This is because an autonomous increase in our exports causes an increase in imports of the other nation which decreases its income and hence dampens the increase in our exports and income.
2. The investment multiplier is $k^* = (1 + m_2/s_2) / (s_1 + m_1 + m_2 . s_1/s_2)$ which is higher than the foreign trade multiplier and yet smaller than that without any foreign repercussions.
3. Finally if there is any increase in the autonomous investment in nation 2, the foreign trade multiplier of our nation is $k^{**} = (m_2/s_2) / (s_1 + m_1 + m_2 . s_1/s_2)$ which is understandably lesser than the investment multiplier in our own country.

Absorption Approach

1. In the price adjustments approach the nation can depreciate / devalue its currency to correct a BoP issue. The extent of the improvement in BoP depends upon the elasticity of the demand for its imports and exports and so the approach is called elasticity approach. But the elasticity approach implicitly assumes that the nation is not at the full employment level so that a depreciation can stimulate the production of its exports and import substitutes.

2. But if the nation is already at full employment, production can't rise. In such a case only a reduction in domestic absorption (i.e. expenditures) can lead to an improvement in BoP due to depreciation. If such a reduction in domestic absorption doesn't happen then it leads to inflation only. We know Y = (C + I) + (X - M) or Y = A + B where A is the domestic absorption and B is the trade balance. Thus if we keep Y as constant then A has to decrease in order to accommodate increasing B.
3. A depreciation of the deficit nation's currency automatically reduces domestic absorption if it redistributes income from wages to profits (since profit earners have higher mps). In addition increase in domestic prices from depreciation reduces the value of real money balances with the public so that it has to reduce consumption.

Monetary Adjustments

1. When the exchange rate is not freely flexible a BoP deficit tends to reduce domestic money supply. Unless sterilized this leads to a rise in interest rates (as money is shifted away from speculative uses to transaction uses). The rise in interest rates discourages investment and reduces national income and this leads to a decline in imports thereby automatically correcting BoP. The reduction in money supply may also reduce prices in the deficit nation which in turn will improve its trade balance.
2. Moreover such a rise in interest rates also attracts foreign capital further helping correction of BoP. Indeed it is through these changes that automatic adjustment seems to have actually taken place in the gold standard (as against the price specie flow mechanism).

Synthesis of Automatic Adjustments

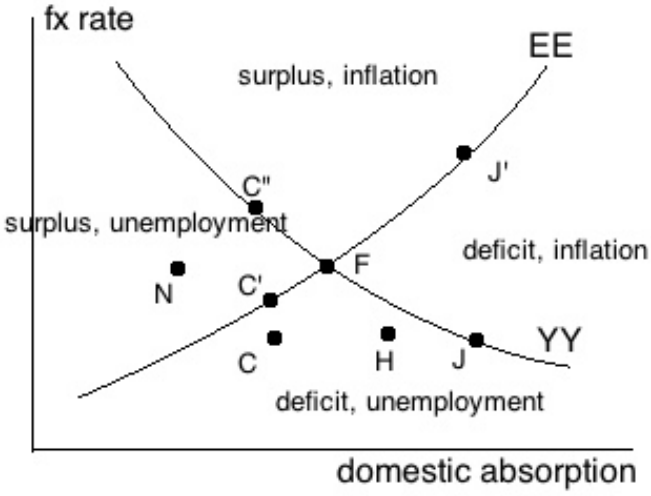
1. Automatic adjustments are the price, income and monetary adjustments given above. Here we see their interplay.
2. In a freely flexible system a nation currency depreciates until the BoP deficit is eliminated. A depreciation stimulates income of the deficit nation and induces imports to rise thus reducing a part of the original improvement in trade balance. This means that the depreciation required to correct the BoP deficit would be larger than that required if these automatic adjustments were not present.
3. Except under a freely flexible system a deficit also tends to reduce the money supply and thus increasing interest rate. This in turn reduces I and hence Y and hence improves the trade balance. It can also lead to a fall in prices which will again improve the trade balance. Moreover higher interest rates also attract capital inflows and reduces the deficit.
4. In a fixed exchange rate mechanism, most of the automatic adjustment comes from above mentioned ways unless a devaluation is resorted to. Thus without resorting to any policy and just letting automatic adjustments to work we can maintain equilibrium.
5. However automatic adjustments have many disadvantages. (a) A nation facing an autonomous increase in its imports at the expense of domestic production will have to further let it national income fall so as to restore trade balance. Similarly a nation facing autonomous increase in exports will have to accept domestic inflation to restore trade balance. (b) To let monetary adjustments to work a nation will have to sacrifice its monetary policy.

Q. What do you understand by 'sterilization' effects of foreign exchange market intervention? How does 'sterilization' work in the case of imperfect capital mobility? (2010, I, 30)

Theories of Policy Mix (Adjustment Policies)

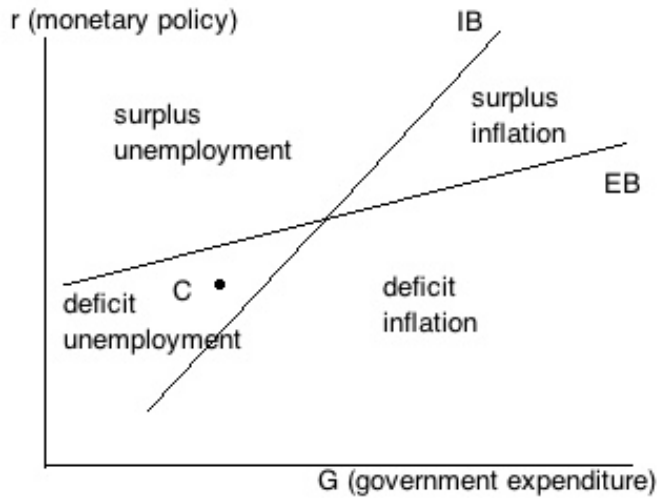
1. The need for adjustment policies arises because automatic adjustments have many disadvantages. The economic goals of the nation can be (a) internal balance, (b) external balance, (c) reasonable growth, (d) equitable distribution and (e) adequate protection of environment. It was postulated by Meade that the number of policies needed is same as the number of objectives.
2. There can be 3 type of policies - (a) Expenditure changing policies vis expansionary (or contractionary) fiscal and monetary policies. (b) Expenditure switching policies vis devaluation etc. (c) Direct controls on capital and goods flows.

Swan Diagram - Zero Capital Mobility and Fixed Prices



1. The Swan diagram shows us how we need a combination of expenditure changing and expenditure switching policies to achieve simultaneous internal and external balance in the economy. We assume zero capital mobility and fixed prices here.
2. On the y axis is fx rate and as we move up there is a depreciation and as we move down there is an appreciation of the domestic currency. On the X axis is the real domestic expenditure which also includes government expenditures. The EE curve denotes the combinations of fx rates such that BoP is balanced. It is positively sloped because for a higher fx rate (i.e. depreciation) we will have trade surplus (if Marshall Lerner condition is satisfied). So we need higher domestic absorption to induce more imports and balance out the BoP again. YY curve on the other hand shows the combination of fx rates and levels of domestic absorption needed to achieve internal equilibrium (price stability and full employment). It is negatively sloping because a lower fx rate (appreciation) lowers trade balance and domestic production. So domestic absorptions have to increase in order to restore the internal equilibrium (by making up for the lost external demand).
3. Areas above EE curve will have BoP surplus and areas below will have a deficit. Areas above YY curve will have inflation and areas below it will have unemployment. Now unless we are at points F or N we will require 2 different policies to achieve both internal and external equilibrium (i.e. to reach point F).
4. If we start from C (deficit, unemployment), then we need a combination of both expenditure changing and expenditure switching policies to reach F. If we resort to only expenditure switching policies, we may reach external equilibrium (point C') by a devaluation. A still higher devaluation will take us to internal equilibrium (point C'') but such a policy alone can't take us to point F. If we resort only to expenditure changing policy we can achieve internal balance (point J) but can't reach F. So we need 2 different policies to achieve internal and external equilibrium. @ H we will need contractionary expenditure changing policy combined with a devaluation to reach F.
5. Even if we already had internal balance (say @ point J), a devaluation alone can get us to external equilibrium (point J') but not simultaneously external and internal equilibrium. Only if we happen to be directly across or directly above or below point F (say @ point N) then we need only 1 policy.
6. However in the Bretton Woods system nations didn't resort to expenditure switching policies even if there were fundamental disequilibria. Surplus nations enjoyed the prestige of surplus and accumulation of reserves. Deficit nations feared loss of prestige and destabilizing capital flows on devaluation. So nations were left with only expenditure changing policies. Then Mundell showed how we can use the fiscal policy to achieve internal balance and monetary policy to achieve external balance simultaneously.

Policy Mix and Effective Market Classification - Capital Mobility Allowed, Fixed Exchange Rates

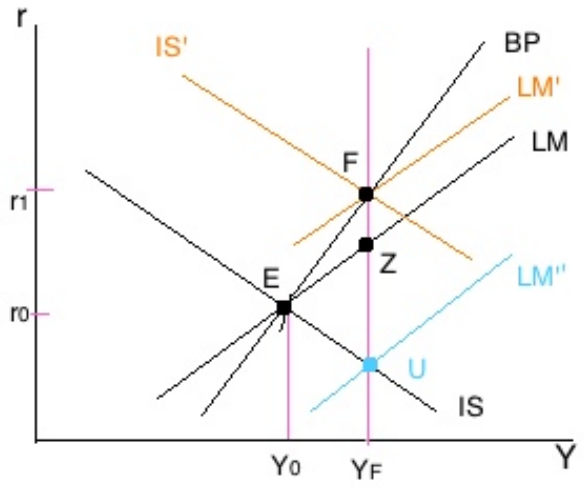


1. Y axis measures interest rates or the monetary policy. X axis measures the government expenditure or the fiscal policy. IB measures the combination of fiscal and monetary policy such that internal balance is maintained. It is positively sloped because as the government expenditure increases AD increases. This creates inflationary pressures which have to be countered by higher interest rates. Similarly as G falls, it create unemployment pressures which have to be countered by an easy monetary policy.
2. EB shows the combination of fiscal and monetary policy such that external balance is maintained. This is positively sloped as well because as G increases, Y increases (or prices increase). This tends to worsen the trade balance and so we need a tighter monetary policy (higher interest rates) to attract more capital and thus to balance out the BoP. But EB is flatter than IB so long as capital flows are highly sensitive to the interest rate differentials. This is because if the flows are highly sensitive and G increases, only a small increase in r is needed to attract large enough flows so as to negate the adverse impact of higher G on trade balance. But to achieve internal balance larger change in r is needed to counter the inflationary effect of higher G.
3. Following the principle of effective market classification in this case monetary policy should be targeted towards achieving external balance while fiscal policy should be used for internal balance. Lets say we are @ point C (deficit, unemployment) then to correct unemployment we should follow expansionary fiscal policy and then to correct deficit we should follow expansionary monetary policy to reach the simultaneous equilibrium of IB and EB curves. If on the other hand we use contractionary fiscal policy to correct deficit and reach EB and then contractionary monetary policy to correct unemployment then we will move away from the equilibrium.
4. But its limitations are the time lags involved in the impact of fiscal and monetary policies. Moreover the capital flows may be once for all types and not continuous as assumed here. In real world most countries use fiscal and monetary policies both to achieve internal balance only and switch to external balance only when the situation becomes too serious.

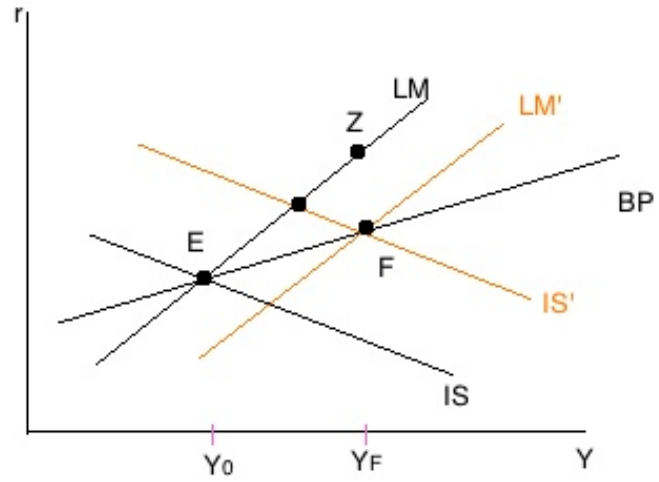
Fiscal and Monetary Policies for Internal and External Balance - Fixed Rates
(a) Assumptions

1. Capital is assumed to be mobile and responsive to interest rate differentials. In fact it is the capital mobility which allows us to separate the fiscal and monetary policies and direct fiscal policies to achieve internal balance.
2. Constant prices are assumed.

(b) Fiscal and Monetary Policies Needed When Starting from External Balance and Unemployment

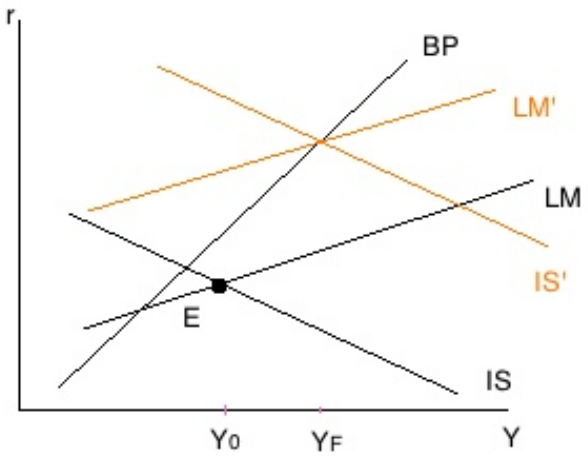


1. Let the economy be initially @ E where external balance is achieved (BP cuts @ intersection of IS and LM curves) but economy is below the full employment level ($Y_0 < Y_F$).
2. Now if we use monetary policy to achieve internal balance (i.e. reach Y_F) then we can shift LM curve to the right (LM'') and intersect the old IS curve @ point U. But at this point we have external disequilibrium and a BoP deficit. So money will flow out of the country, central bank will have to intervene and sell $ (to keep exchange rate fixed) and buy INR and this would reduce the money supply thus shifting LM curve back (from LM'' to LM). Thus monetary policy will be ineffective in pursuing external goals.
3. If we use fiscal policy to achieve internal balance (i.e. reach Y_F) then we can follow an expansionary fiscal policy. This will shift the IS curve to right (IS'). Now suppose we shift the IS curve just enough that it intersects the old LM curve @ Y_F level or point Z. We now have internal balance but BoP deficit. So central bank will have to intervene to contract money supply which will lead to LM curve shifting to left and thus we will again fall short of Y_F. So we need to shift IS curve more than what is required to just reach Y_F on the old LM curve. Now IS' intersects LM to the right of Z, BoP deficit occurs, central bank intervenes, LM moves to LM' and we have external balance and internal balance @ F. Thus we need 2 conflicting policies - expansionary fiscal and contractionary monetary policy to achieve equilibrium.

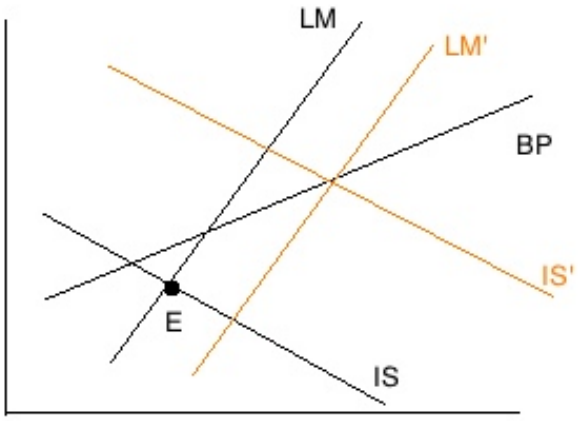


1. In case the capital flows are more elastic (i.e. BP curve is flatter than LM curve), we find that we now need a less expansionary fiscal policy (i.e. IS' should intersect old LM at a point to the left of Y_F) and then due to BoP surplus money supply will increase and LM curve will shift to right to reach F.

(c) Fiscal and Monetary Policies Needed When Starting from External Deficit and Unemployment



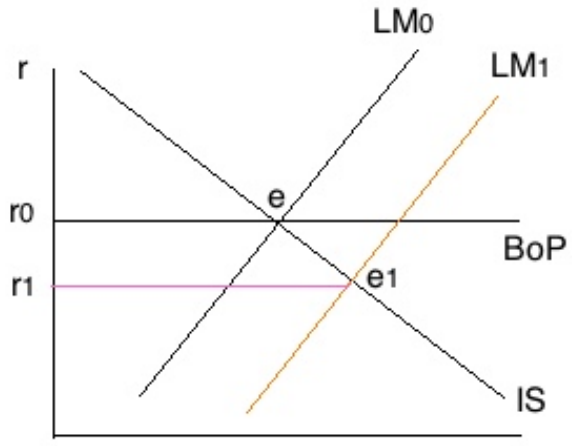
1. Here again we have to follow a stronger fiscal expansionary policy (such that IS' intersects old LM curve @ a point to the right of Y_F) so that when LM curve shifts left (to LM') equilibrium is restored @ Y_F.



1. If the capital flows are more elastic (i.e. BP curve flatter than LM) then we need a weaker expansionary fiscal policy and an expansionary monetary policy to reach full employment.

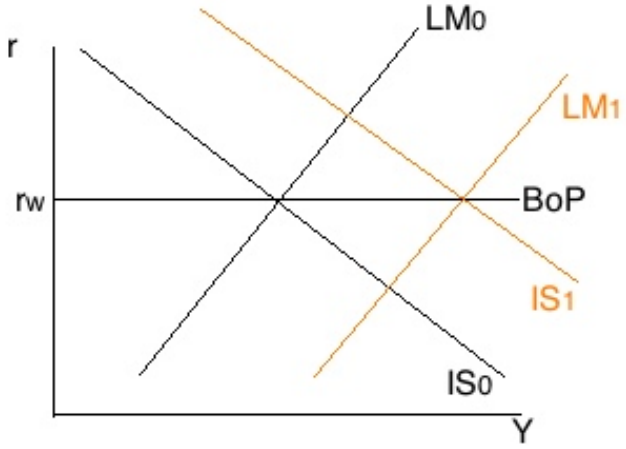
(d) Monetary Policy with Perfectly Elastic Capital Flows - The Impossible Trinity

1. In a small economy if there is even a small difference between domestic and the world interest rates the capital flows are so large that the BP curve is virtually horizontal. So $r_d = r_w$. In the previous discussions we can see that a monetary policy was required only because BP curve was steeper so that a certain change in interest rates is required to achieve desired capital flows. But if BP curve is flat, a small change in interest rates can lead to large capital flows which means that there can't be any role for a monetary policy.



1. We can't pursue a fixed exchange rate, full capital mobility as well as independent monetary policy. Suppose the central bank increases the money supply in an economy. Thus the LM curve will shift right (LM_0 to LM_1). But this will lead to a fall in r_d and hence massive capital outflows. These capital outflows will tend to depreciate the currency. But under a fixed exchange rate regime the central bank will have to intervene in the fx market and sell $ and buy INR. But by buying INR central bank will be reducing the money supply and thus the LM curve will shift back (LM_0 to LM_1). Thus in other words in the world of perfect capital mobility and fixed exchange rates, monetary policy is ineffective.

(e) Fiscal Policy with Perfectly Elastic Capital Flows

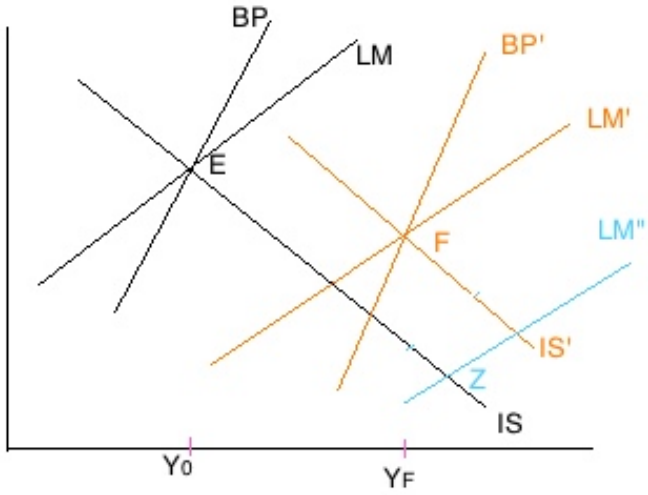


1. Explain figure above and show how fiscal policy is entirely effective.

Fiscal and Monetary Policies for Internal and External Balance - Floating Rates
(a) Assumptions

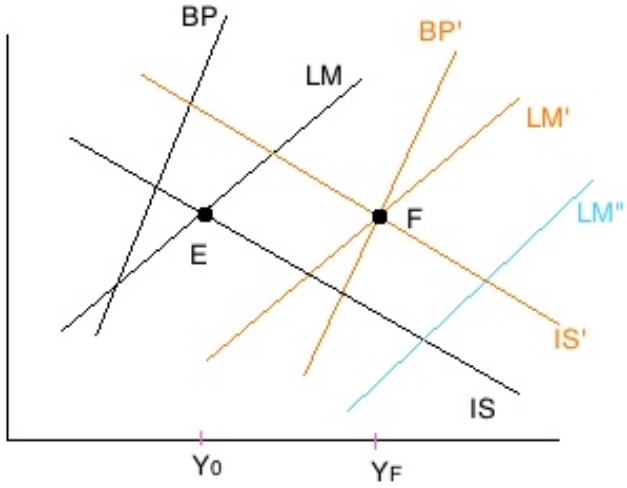
1. Capital is assumed to be mobile and responsive to interest rate differentials. In fact it is the capital mobility which allows us to separate the fiscal and monetary policies and direct fiscal policies to achieve internal balance.
2. Under floating rates, a depreciation of the domestic currency leads to a rightward shift in BP curve (this is because the trade balance has improved and we now need only smaller capital inflows or less interest rate for the same national income). Similarly IS curve shifts to right as well (because of higher NX) and LM curve shifts to left (because prices increase which causes a fall in real money supply).

(b) Fiscal and Monetary Policies Needed When Starting from External Balance and Unemployment

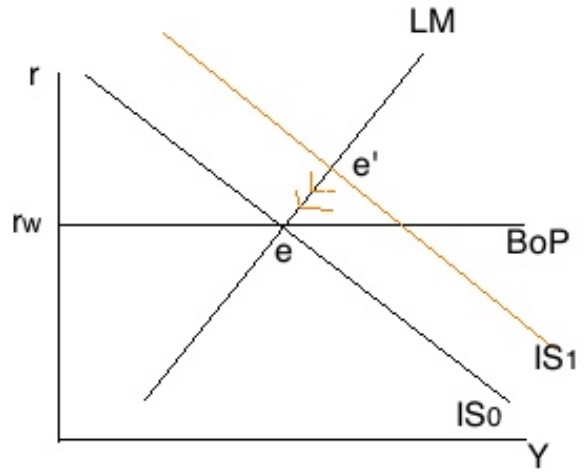


1. Here @ E we have external balance but not internal balance as $Y_0 < Y_F$. So we can follow an expansionary monetary policy and shift the LM curve to the right (LM''). Note that if we shift the LM curve only enough so as to cut the old IS curve @ Y_F we will not achieve equilibrium. This is because @ the new intersection of IS and LM'' curves we have a BoP deficit, so fx rate depreciates which in turn shifts BP and IS curves to the right and LM curve to the left. So we will have a new equilibrium between Y_0 and Y_F and will have to repeat the same process again. So we shift the LM curve strongly (so as to intersect old IS curve to the right of Y_F) so that when the currency depreciates (and IS and BP curves shift to right and LM curve shifts to left) we get back to Y_F.
2. Same thing can be achieved by shifting IS curve to the right first by expansionary fiscal policy. In that case as the currency depreciates we will have a rightward movement of BP and IS curves and a leftward movement of LM curve. Repeating the process we can get to Y_F level.

(c) Fiscal and Monetary Policies Needed When Starting from External Deficit and Unemployment

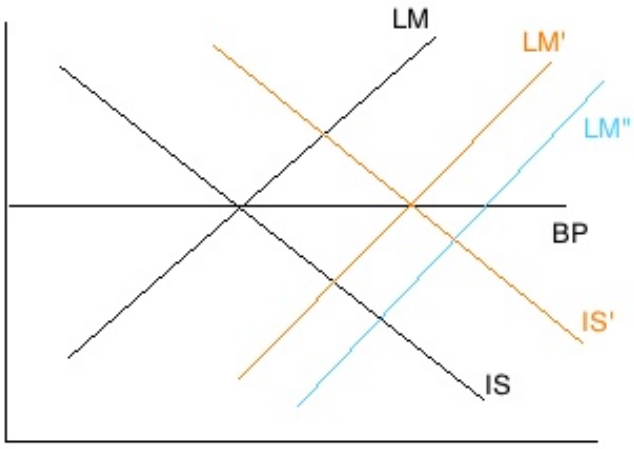


(d) Fiscal Policy with Perfectly Elastic Capital Flows



1. If IS curve shifts to right (due to say increased NX or G or I) then we will move from e to e'. Domestic rates will be higher than world rates so there will be large capital inflows. This would lead to currency appreciation and hence a fall in NX. Thus IS will fall back and we will move back to e.

(e) Monetary Policy with Perfectly Elastic Capital Flows



1. Explain the graph how it is effective.

Q. In the contemporary world of perfect capital mobility and fixed exchange rates, why is the monetary policy ineffective to maintain equilibrium? (2011, I, 20)

Q. How does the policy mix of fiscal and monetary policies maintain equilibrium in balance of payments and full employment? (2011, I, 20)

Q. Show that in an open economy, given full capital mobility, fiscal action has maximum effect under fixed exchange rate and monetary action has similar effect under flexible exchange rate. (2010, I, 40)

Q. Define a balance of payments function and explain the factors that cause a shift in this function. Explain the general equilibrium situation in a 4 sector IS-LM model. (2009, I, 20)

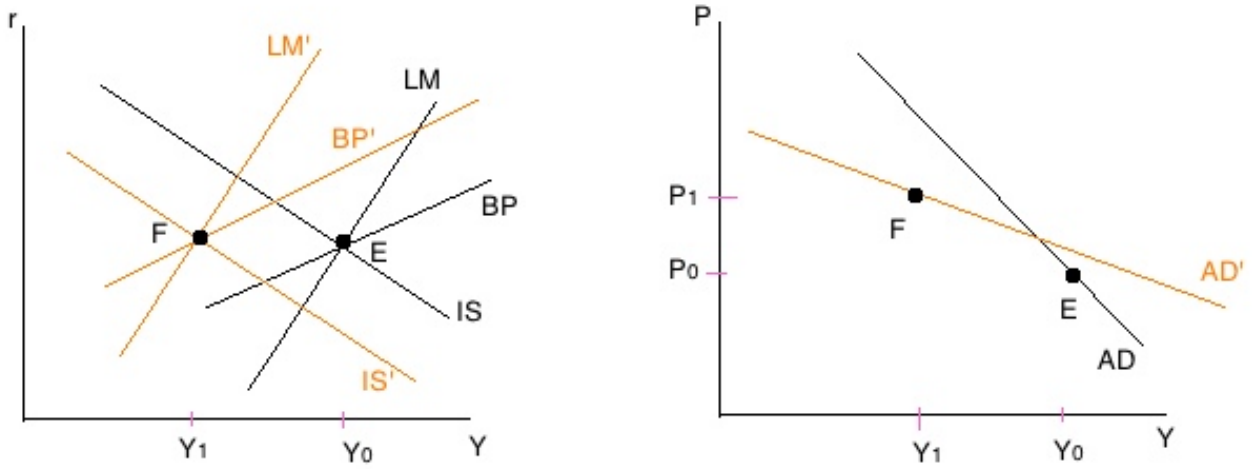
Q. Do you subscribe to the view that in a small open economy with perfect capital mobility, expansionary fiscal policy is ineffective under freely flexible exchange rate, whereas expansionary monetary policy will increase the national income. Elaborate your answer using suitable diagrams. (2009, I, 60)

Prices and Output in an Open Economy

1. The discussion earlier assumes prices remain fixed while the economy is below full employment and increase only after that. But in real life prices increase and decrease continuously according to business cycles. We derive

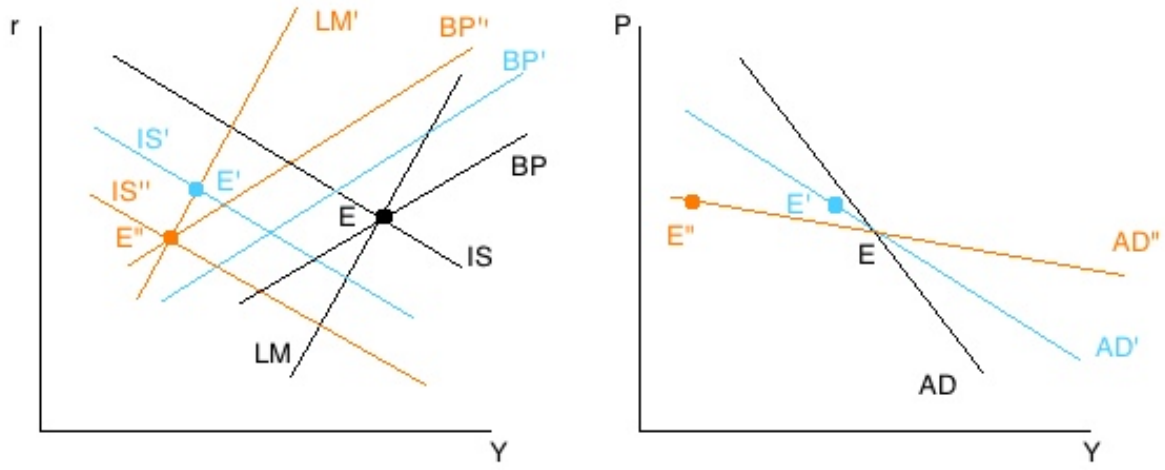
below equilibrium conditions when prices are allowed to vary.

Derivation of AD Curve in an Open Economy - Fixed Exchange Rate



1. Let the initial equilibrium be @ E in both panels above and let AD be the AD curve as in a closed economy. Now lets say prices increase. The increase in prices reduces the real money held by the public and hence LM curve shifts left to LM'. But the increase in prices will also lead to worsening of trade balance (since domestic prices are higher so our exports will be less competitive and imports will be attractive). So IS curve shifts down (to IS'). The worsening of trade balance means that now we need more capital inflows for the same amount of Y. More capital inflows would be forthcoming only with increased interest rate so BP curve will shift left too (to BP'). Thus we will have a new equilibrium @ point F. When we project the locus of such equilibria for different level of prices we will get the AD curve (AD') in the open economy. This will be flatter than AD curve in the closed economy (because we can see in the left panel above that had the economy been closed and there were no shift in IS and BP curves, change in Y to restore equilibrium would have been less for a given price change). We can also establish here that the more responsive the imports and exports are to changes in domestic prices, the flatter the AD curve. Note that if LM' and IS' were not in equilibrium with BP' then there would be a BoP surplus (or deficit) and LM' curve would move again to bring BoP in equilibrium.

Derivation of AD Curve in an Open Economy - Flexible Exchange Rate

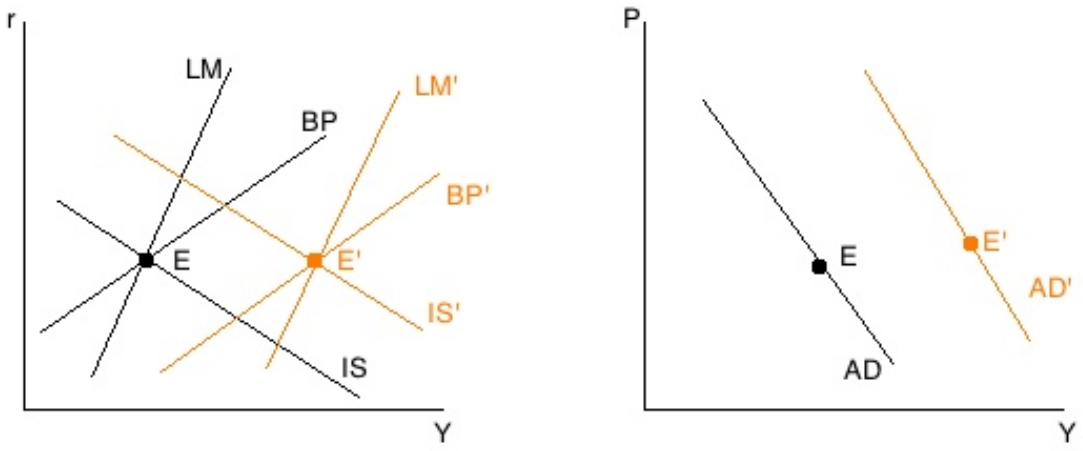


1. Let the economy be initially in equilibrium @ point E and let closed economy AD curve be AD. Now prices increase from P_0 to P_1. Like the discussion in the case of fixed exchange rate above LM curve shifts left to LM', IS shifts down (due to deterioration of trade balance) to IS' and BP shifts left to BP'. But unlike in the case of fixed exchange rate where intersection of LM' and IS' had to be on the BP' curve (otherwise LM' would shift due to change in reserves) in this case LM' will not shift. Instead if say the new intersection point E' is above the BP' curve then it means there is a trade surplus. This would tend to appreciate the domestic currency. Such an appreciation will have adverse effect on trade balance and our IS' curve will fall further to IS'' curve. Similarly because trade balance has deteriorated we will need more capital inflows to balance the BoP and hence BP'

curve shifts left further to BP" curve. This goes on until economy reaches E" where all equilibria are restored. When projected on the AD curve we can see that for the given price change now the change in Y is higher and thus AD" curve is the flattest.

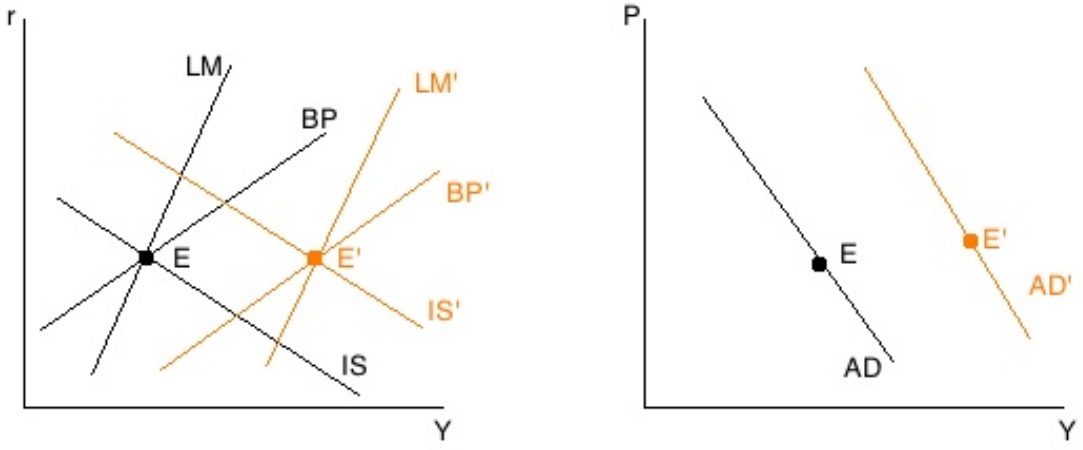
2. In the above case when E' falls below the BP' curve there is a trade deficit. This shifts IS' curve upwards and BP' curve to the right so that equilibrium will be restored at a point to the right of E'. So AD" curve will be steeper than AD' curve. If IS' and LM' curves intersected on the BP' curve, AD" curve will be same as AD' curve.

Effect of Real Sector Shocks on AD in Open Economy - Fixed Exchange Rate



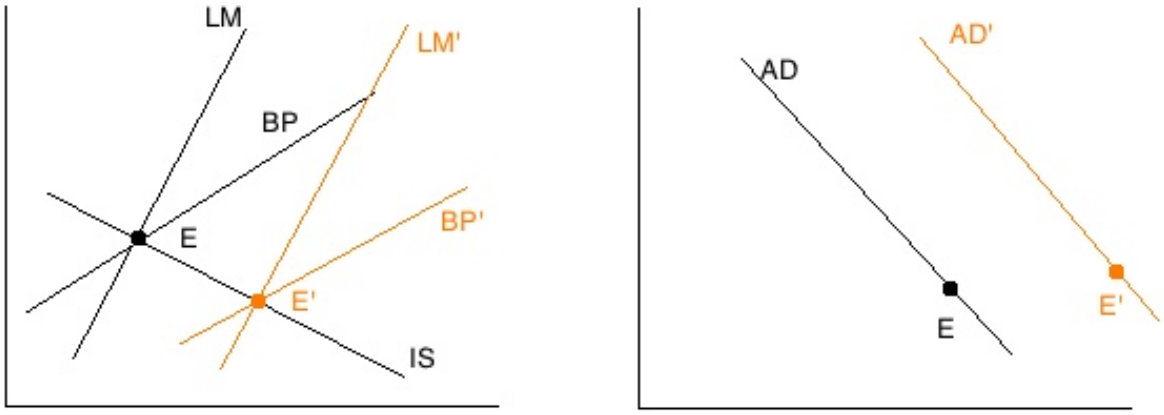
1. Let economy be in initial equilibrium @ point E and let initial AD curve be AD. Now say there is an exogenous increase in exports. So IS curve shifts right (to IS') because of increased production and also BP curve shifts right (to BP') because improved trade balance means lesser need of capital inflows. IS' and LM curves now intersect above the BP' curve so there is a BoP surplus and hence inflow of reserves which increases domestic moneys supply causing the LM curve to shift right as well (to LM') and economy's new equilibrium is @ E'. Thus we see that at same price now economy is at higher output, so AD curve shifts right (to AD').

Effect of Real Sector Shocks on AD in Open Economy - Floating Exchange Rate



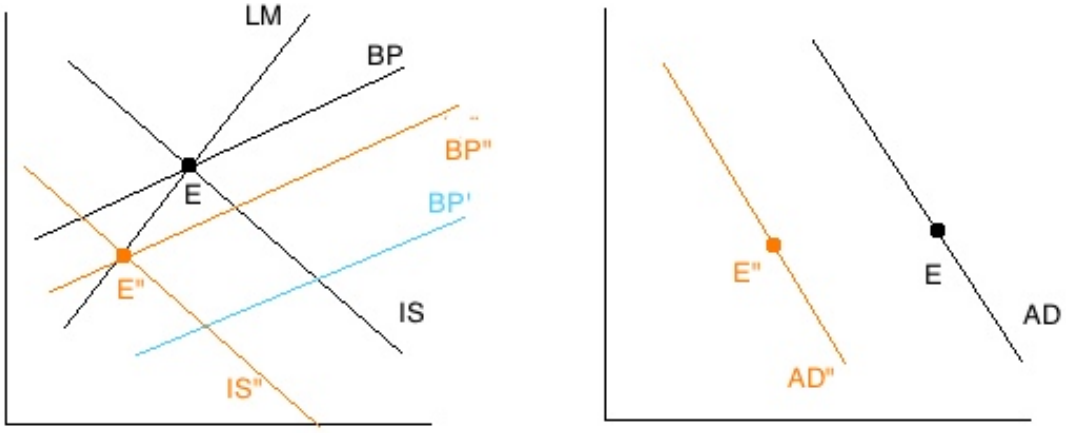
1. Let economy be in initial equilibrium @ point E and let initial AD curve be AD. Now say there is an exogenous increase in exports. So IS curve shifts right (to IS') because of increased production and also BP curve shifts right (to BP') because improved trade balance means lesser need of capital inflows. IS' and LM curves now intersect above the BP' curve so there is a BoP surplus. In case of BoP surplus, IS' curve will shift back down and BP' curve will shift back so that they come back to their original position. Thus AD' curve too shifts back to AD and there is no change. So real sector shocks have no impact on AD curve in case of floating rates.

Effect of Monetary Shocks on AD in Open Economy - Fixed Exchange Rate



1. Let the economy be in initial equilibrium @ point E. Now say there is exogenous capital inflow so that BP curve moves to right (to BP'). But the IS-LM intersection is still @ E which is above BP' now so that BoP surplus originates and under fixed exchange rate this leads to a rightward shift in LM curve to LM' to intersect the IS and BP' curves @ E'. Thus overall there is a rightward movement in AD curve (to AD').

Effect of Monetary Shocks on AD in Open Economy - Floating Exchange Rate

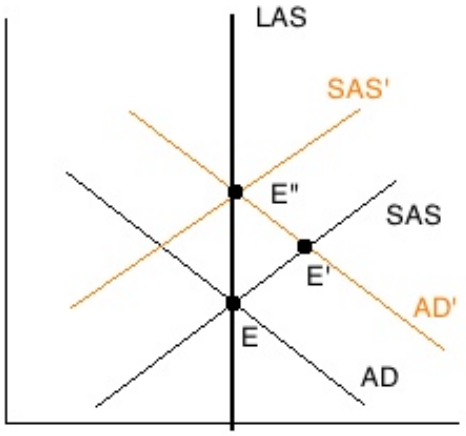


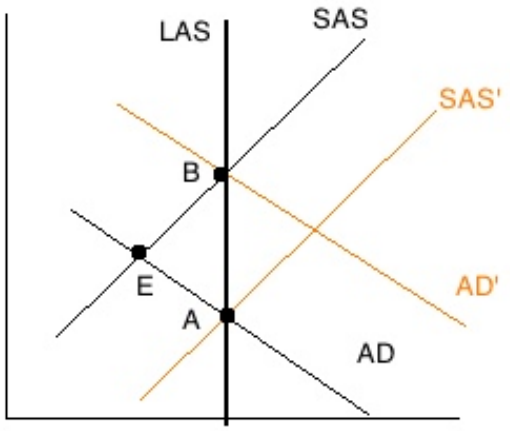
1. Let the economy be in initial equilibrium @ point E. Now say there is exogenous capital inflow so that BP curve moves to right (to BP'). But the IS-LM intersection is still @ E which is above BP' now so that BoP surplus originates. This BoP surplus will tend to appreciate the currency leading to a downward shift in IS curve (as production declines) and leftward shift in BP' curve (as worse trade balance necessitates higher capital inflows). So the new equilibrium is at E" which is @ intersection of IS", LM and BP". AD curve shifts left to AD".

Recap: Fiscal and Monetary Policies & AD in Open Economies

1. IS-LM framework tells us that under highly elastic capital flows, under fixed exchange rate only fiscal policy is effective while under floating exchange rate only monetary policy is effective. If we allow prices to vary then also under fixed exchange rate and highly elastic capital flows expansionary fiscal policy will lead to capital inflows and is very effective in shifting the AD curve to the right. In such cases monetary policy is not effective because any attempt to follow easy monetary policy will lead to lowering of rates, capital outflow and consequent tightening of money supply again. Opposite is true under floating exchange rates.

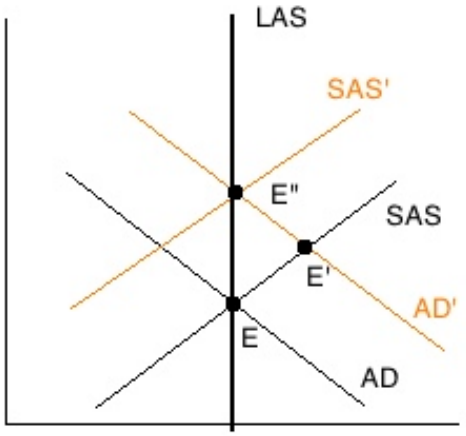
Effect of Fiscal Policy in Open Economy with Flexible Prices - Fixed Exchange Rate

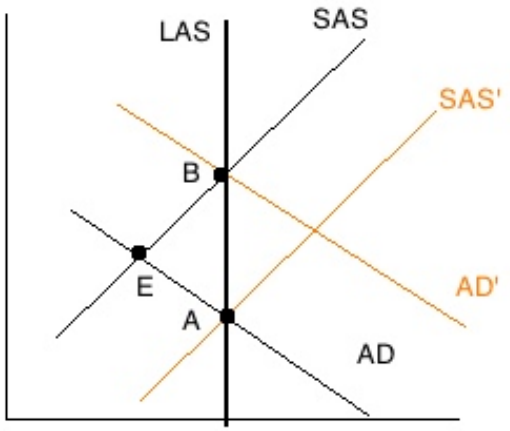




1. An expansionary fiscal policy will increase AD (to AD') so that we move from E to E' in the left panel above. But note that this doesn't lie on the LAS curve so inflation will occur, SAS will shift to the left to SAS' and we will move back to E" on LAS curve. Thus no change in output but change in prices.
2. In the right panel lets be initially @ E (in recession). Expansionary fiscal policy can take us to full employment @ B with higher prices. If left to itself economy will go to A as wages and prices adjust downward and hence SAS shifts to right (to SAS'). Fiscal policy can help us overcome recession quickly. Also note that a movement from E to A would have improved the nation's trade balance since prices are lower.

Effect of Monetary Policy in Open Economy with Flexible Prices - Floating Exchange Rate

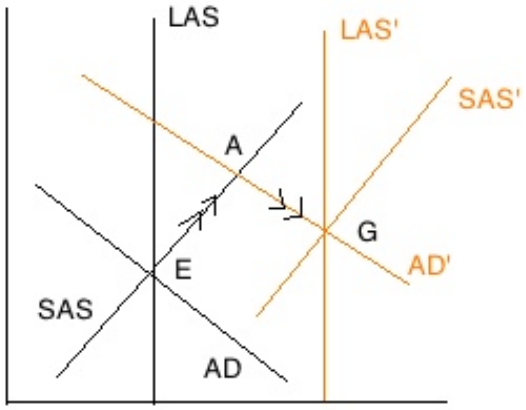




1. An expansionary monetary policy will increase AD (to AD') so that we move from E to E' in the left panel above. But note that this doesn't lie on the LAS curve so inflation will occur, SAS will shift to the left to SAS' and we will move back to E" on LAS curve. Thus no change in output but change in prices.
2. In the right panel lets be initially @ E (in recession). Expansionary monetary policy can take us to full employment @ B with higher prices. If left to itself economy will go to A as wages and prices adjust downward and hence SAS shifts to right (to SAS'). Monetary policy can help us overcome recession quickly. Also note that a movement from E to A would lead to an appreciation of the domestic currency.

Macroeconomic Policies For Growth

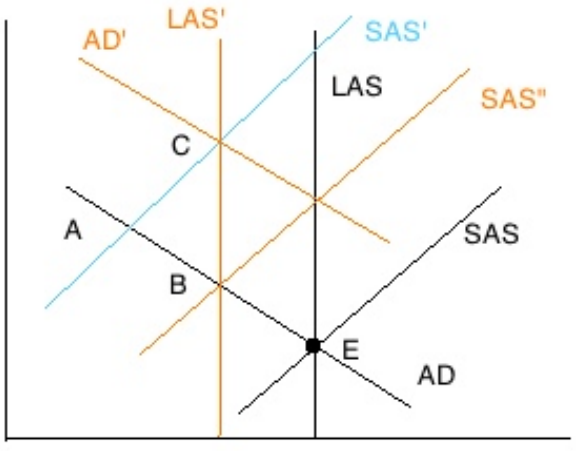
1. Expansionary fiscal and monetary policies don't just increase AD. They can also increase LAS by creating additional production capacity via additional and induced investments.



1. In the above case we initially move along the SAS curve from E to A. But in time the LAS curve and the SAS curve shift to right and we move from A to G. Whether in LR the prices will be higher or lower will depend on the relative shift in AD and LAS curve.

Macroeconomic Policies for Supply Shocks

1. The effect of oil shocks on AD is unclear on the oil importing countries. While on one hand it leads to worsening of trade balance and currency depreciation and thus a shift to the right in their AD curves. But it may also lead to a recession which may curb the demand for other items or say an investment by the OPEC countries in the importing countries and hence a fall in AD curve. So in our analysis we assume that AD remains unchanged as a result of oil shocks.



1. Let the economy be initially @ E. Now the supply shock hits and we move to A as SAS shifts left (to SAS'). Now if nothing is done then with time SAS" will shift down as wages and prices adjust. But because costs have gone up so LAS curve will also shift to left (LAS') and so SAS" will not go all the way back to SAS. Thus in the LR prices will still be higher and output lower than the initial equilibrium level.
2. Now @ A we can also adopt expansionary policy to take us to C without waiting. But this will create additional inflation. Whether to do it or not depends on the tolerance level of the country for inflation.

<u>Exchange Rate Regime</u>
Case for Fixed Exchange Rates

1. Exchange rate stability. Good for trade, good for capital. Hedging costs are lower. Day to day fluctuations are eliminated and the supply curve is anyways more stable in long run.
2. Speculations under floating rates are destabilizing. Under a truly fixed exchange rate system (which lets full interplay of automatic adjustments) speculations will be stabilizing as well and we will have BoP stability in LR.
3. Serves as an anchor against π.

4. Promotes economic integration.

Case for Floating Exchange Rates

1. Automatic price adjustments under fixed exchange rates (say price specie flow) can lead to BoP equilibrium. But it is better to change just one price (exchange rate) than to rely on changes in all internal prices. Furthermore there can be distortions in the internal price markets (like sticky wages) which can prevent the automatic adjustments thereby leading the pressures to build up. This can lead to an explosive situation. On the other hand floating rates gradually release such pressures.
2. Fluctuations in exchange rates are also dampened via stabilizing speculations as argued by Friedman (for speculators to consistently make money they must buy low and sell high which means speculations will be stabilizing). Fixed exchange rates can give rise to destabilizing speculations.
3. Flexible rates clearly help identify the degree of comparative advantage of a nation while fixed rates can mask that or even reverse it completely.
4. Under flexible rates the nation needn't concern itself with BoP problems and can use all policies it has to pursue domestic goals. Flexible rates can also aid in policy goals. thus for example anti-inflationary policy will lead to currency appreciation thereby leading to further fall in prices.
5. It can help nations isolate themselves from inflation in other parts of the world. Each nation has a different inflation - unemployment tolerance level and flexible rates help them achieve that.
6. Some domestic nations set exchange rates too low to encourage import of capital goods. But this penalizes their exports and then the government imposes more regulations and subsidies creating more economic inefficiency.

Q. "Under the flexible foreign exchange rate scenario, devaluation has become redundant." Comment upon the statement. (2007, I, 20)

Implications

Currency Boards

1. It is the most extreme form of exchange rate peg. Under CBA the nation rigidly fixes the exchange rate to $ (usually) and its money supply has to be fully (100%) backed by $. If there is BoP surplus, money supply will increase and if there is deficit, money supply will decrease.
2. Dollarization is even more extreme where the nation abandons its own currency and thus the option that it may later remove the dollar peg.

Trade Policy and Developing Countries

Case for Free Trade

1. Gains from specialization: Countries specialize in commodities they have comparative advantage in.
2. Gains from economies of scale.
3. LR dynamic gains: Free trade promotes LR growth by (a) raising S & I as Y increases, (b) import of technology and capital goods.
4. Promotes competition and prevents monopoly.
5. Gains of consumption.

Case for Protection

1. Employment argument: But it is debatable since (a) by producing inefficient commodity we will be taking away resources from the production of more efficient commodity. (b) trade war will reduce our exports as well. (c) many export industries are dependent upon imports.
2. Infant industry argument: One case where it is really valid is if there are large scale positive externalities of the industry (widespread linkages etc.) then it makes sense.
3. Antidumping argument, BoP argument.
4. Redistribution of income argument: Stopler Samuelson theorem says free trade harms scarcer factor. Agriculture and other sectors of poor can be protected. High tariffs can be imposed on luxury items.

BOP Adjustments

BoP Disequilibrium

1. Cyclical: If boom then M > X.

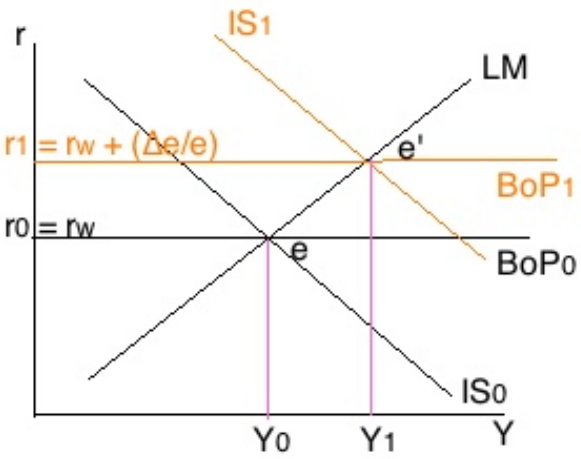
2. Secular: If long term capital flows don't match with planned savings and investments.
3. Technological: Technology changes redistribute comparative advantage and can thus change BoP situation.
4. Structural: When a change in demand / supply conditions lead to a structural change in import / export situation. For example if foreign demand for Indian textiles falls, it will lead to a structural imbalance.

Q. What are the different kinds of disequilibrium in balance of payments? Suggest some measures to solve the problem of structural disequilibrium in balance of payments. (2007, I, 20)

Speculative Attacks
Asset Markets & Exchange Rate Expectations

1. We don't find $r_d = r_w$ in most parts of the world under floating fx rate regimes. This is because interest rates in a depreciating currency need to be higher to maintain same expected returns in $ terms. Thus $r_d = r_w + (\Delta e/e)$ where $(\Delta e/e)$ is the expected change in fx rates.
2. Thus BoP will be given by $Bp = NX(Y, Yw, e.Pw/P) + CF(rd - rw + \Delta e/e)$.

Impact of Speculative Capital Flows

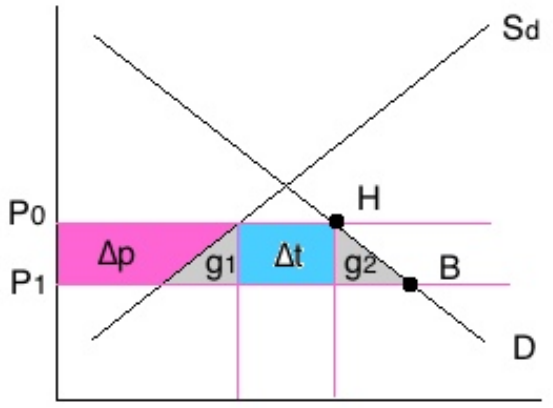


1. Changes in expectations of fx rate lead to change in not only the actual fx rate but also r_d and Y_d. Suppose domestic currency is expected to depreciate then @ current interest rates $ rate of return is lower than return in the world. Thus BoP line shifts from BoP_1 to BoP_2. Capital outflows happen and currency depreciates. This results in improvement in NX and IS curve shifts right (IS_0 to IS_1). Thus a new equilibrium is reached where output and rates are higher (higher Y leads to higher M_d and given fixed M_s r would be higher).

Trade Blocks and Monetary Unions
Different types of Unions

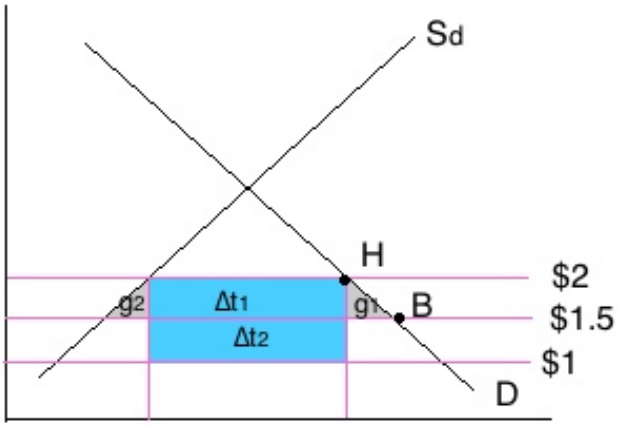
1. FTA: Member countries are free to impose differential tariffs on goods from non member countries.
2. Customs union: It is a FTA + agreement by member countries to impose a common tariff on goods from non member countries.
3. Common market: It is a customs union + free movement of labor and capital between member countries.
4. Economic union: It is a common market + varying degree of integration in monetary and fiscal policies.

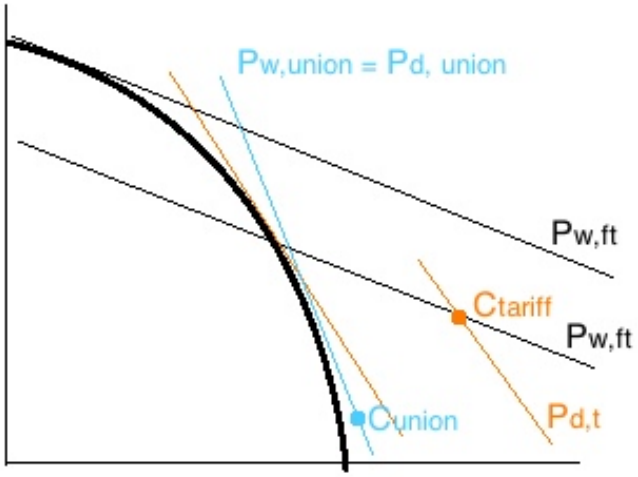
Trade Creating Customs Union - Static Welfare Analysis



1. Let there be 3 nations - N_1, N_2 and N_3. Let the production cost of X be \$1, \$1.5 and \$3 respectively. Let N_3 impose an initial tariff of 100% uniformly on imports. Now it forms a customs union with N_1. So while earlier its consumers were paying \$2 for one unit of X now they will have to pay \$1 only. Net static gain is $g_1 + g_2$. Analysis is opposite to tariff in a small country.

Trade Diverting Customs Union - Static Welfare Analysis





1. In the above case N_3 forms a customs union with the less efficient nation (N_2). So while earlier the domestic price of X was \$2 (100% tariff on N_1) now it will become \$1.5. Loss of tariff to the government will be $\Delta t_1 + \Delta t_2$ but Δt_1 will be gained by the consumers but loss of Δt_2 will not be recovered. Additional gain will be $g_1 + g_2$ so that the net gain to N_3 will be $g_1 + g_2 - \Delta t_2$.
2. We can see that the flatter (i.e. more elastic) the D and S_d curves are and lesser the gap between N_1 and N_2 the higher the net welfare.
3. A trade diverting union by reducing the imports is more likely to improve the collective ToT of the union. In a trade creating union opposite is likely to be true because a part of the additional income generated is likely to increase the imports from non member nations.
4. In the partial equilibrium analysis it can be seen that $IC_{tariff} > IC_{union}$. But the diagram can be easily reconstructed to move C_{tariff} towards the left of C_{union}. Thus whether there is a welfare gain or a welfare loss will depend on circumstances.

The Theory of Second Best
(a) Theorem

1. Earlier it was believed that while free trade leads to maximization of world welfare, a move towards freer trade also increases the welfare. To the extent that the customs union was not raising barriers to non member countries, by breaking internal barriers (and hence moving towards freer trade if not free trade) welfare was being increased. But this is not necessarily the case as is put forward by the theory of second best by Viner. This

states that if all conditions required to reach pareto optimum are not satisfied then trying to satisfy as many of these conditions as possible doesn't necessarily (or even usually) lead to the second best position.

(b) Conditions more likely to lead to increased welfare

1. Higher pre union internal barriers between the members increase probability of post union gain in welfare.
2. Lower pre union external barriers with non members lower the probability of trade diverting unions.
3. Greater the market size of the union greater the probability of post union gain as there is greater probability that the low cost producers fall within the union.
4. The more competitive the member nations the higher the probability of specialization in production and trade creation. Thus a union where members are industrial nations is likely to create more welfare than a union between an agricultural and an industrial country.
5. The lower the transportation costs among the member the higher the probability of trade creation.

Dynamic Benefits from Customs Unions

1. It is likely to result in increased competition and hence higher welfare. But this must be ensure by building institutions against cartelization @ the union level.
2. It is likely to generate gains from realization of economies of scale and product differentiation.
3. Formation of union is likely to encourage non members to invest in the union (a process called building tariff factories) to take advantage of the large market.