

Lutz, Stefan

Working Paper

Can taxing foreign competition harm the domestic industry?

ZEI Working Paper, No. B 15-1998

Provided in Cooperation with:

ZEI - Center for European Integration Studies, University of Bonn

Suggested Citation: Lutz, Stefan (1998) : Can taxing foreign competition harm the domestic industry?, ZEI Working Paper, No. B 15-1998, Rheinische Friedrich-Wilhelms-Universität Bonn, Zentrum für Europäische Integrationsforschung (ZEI), Bonn

This Version is available at:

<https://hdl.handle.net/10419/39586>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Zentrum für Europäische Integrationsforschung
Center for European Integration Studies
Rheinische Friedrich-Wilhelms-Universität Bonn



Stefan Lutz

**Can Taxing Foreign
Competition Harm the
Domestic Industry?**

Working Paper

**B98-15
1998**

Can Taxing Foreign Competition Harm the Domestic Industry?

by

Stefan Lutz*

UBS, ZEI, and CEPR

September 1998

Abstract

The answer to the question in the title is yes for the case of ad-valorem taxes, a foreign industry that produces a vertically differentiated good of higher quality, and costs that take the form of quality-dependent fixed costs for both the foreign and domestic firm. The domestic industry loses profits due to the foreign industry's lowering of product quality which intensifies price competition. This result carries through to the case of additional constant marginal costs, if this cost component does not increase too fast with increases in product quality produced. However, it does not hold with quality-dependent marginal costs. In this latter case, the foreign firm will reduce output rather than quality, which tends to reduce foreign competition.

JEL classification: F12, F13, L13

Keywords: trade, tariffs, vertical product differentiation, quality-dependent costs

*Correspondence: Stefan Lutz, UBS AG, Group Economic Research, CH-8098 Zurich, Switzerland, E-mail: slutz@sfb4.econ1.uni-bonn.de. The author acknowledges financial support by DFG LU 633/2-1. He also would like to thank seminar participants at CEP/LSE. The ideas expressed in the paper are those of the author and should not be attributed to the Group Economic Research or UBS AG.

Can Taxing Foreign Competition Harm the Domestic Industry?

1. Introduction

According to the standard trade theory results, taxing the foreign competition will help the domestic firm, hurt domestic consumers, and (for a small country) reduce domestic welfare. The relevant analysis assumes perfect competition or oligopolistic competition in horizontally differentiated products. However, an important property of international markets is the presence of vertical quality differences ("high" vs. "low" product quality) between substitutable products. Product differentiation of this type is an important dimension in international trade, since trade in differentiated but substitutable products (intra-industry trade) has grown most in the last decades. In this context, product quality is a strategic variable for the firm that can be influenced by trade policy.¹

The conceptual economic framework that explicitly includes quality aspects into the analysis is provided by models of vertical product differentiation. Using this approach, I show that the domestic industry is generally harmed for the case of ad-valorem taxes, a foreign industry that produces a vertically differentiated good of higher quality, and costs that take the form of quality-dependent fixed costs for both the foreign and domestic firm. The domestic industry loses profits due to the foreign industry's lowering of product quality which intensifies price competition. However, domestic welfare is increased due to the tariff-revenue effect. This result carries through to the case of additional constant marginal costs, if this cost component does not increase too fast with increases in product quality produced. However, it does not hold with quality-dependent marginal costs. In this latter case, the foreign firm will reduce output rather than quality, which tends to reduce foreign competition. The traditional results will obtain for the case of a foreign industry producing lower quality than the domestic industry. With quality-dependent fixed costs, domestic welfare will fall, since increased profits and revenues are not sufficient to offset consumers' losses. Since profits of the domestic high-quality firm are relatively higher with quality-dependent variable cost, welfare can be increased by a tariff in this case. An especially noteworthy case arises with quality-dependent variable costs, a domestic low-quality producer and covered markets. Here, the domestic consumers as well as domestic industry will win from protection leading to an unambiguous welfare improvement. This is mainly due to the foreign firm's response of reducing output rather than quality. Since competition is relaxed by this, the domestic industry increases quality substantially leading to an increase in average quality sold.

For most of the model variations presented below, analytical solutions are available (or are straightforward to obtain) if they do not contain a variable cost component (or quantity-dependent tax). However, in the presence of quantity-dependent costs or taxes, analytical solutions (if they can be obtained) involve lengthy expressions that are at the least hard to interpret. However, using the analytical results presented so far in the literature as an interpretative guideline, numerical results can be explained sensibly by looking at their graphical representations. This is the methodological course taken in this paper.

¹See Mintz (1973), Levinsohn (1988), Feenstra (1993), Menzler-Hokkanen (1994).

The remainder of the paper is organized as follows. Section 2 describes the basic analytical framework, some main results about market behavior, and the simulations. Section 3 reviews the results of the simulations. Section 4 concludes.

2. Vertical Product Differentiation

The standard model of duopolistic competition with endogenous product qualities has been developed since the beginning of the 80s (Mussa/Rosen 1978, Gabszewicz/Thisse 1979, Shaked/Sutton 1982, Ronnen 1991). Consumers have identical preferences and different incomes. The income differences lead to differences in the willingness to pay for a particular product quality. Two firms (domestic and foreign) offer products of different qualities in one (domestic) market. The firms bear quality-dependent costs and compete in qualities and prices in a two-stage industry game. Since higher product differentiation reduces substitutability and price competition, even identical firms will offer distinct qualities in the resulting market equilibrium. Trade will take place since the foreign firm operates in the domestic market. (In the two-market extension, both firms operate in both markets.) National governments can use trade policy to improve the strategic position of domestic industries.² There is also the possibility of strategic noncooperative interaction between two national governments.

2.1. The Benchmark: Model 1

There are two firms, the domestic firm d and the foreign firm f , both competing in the domestic market. If both firms remain in the market, then they produce distinct goods, sold at prices p_d and p_f , respectively. The two products carry a single quality attribute denoted by s_d and s_f , respectively. Either firm faces production costs that are increasing, convex (quadratic) functions of quality, the exact level of which depending on quality chosen and a quality cost parameter b . Marginal costs are equal to zero for both firms.³ Total costs of firm i are then:

$$c_i = b_i s_i^2 \quad (1.1)$$

In the domestic market, there is a continuum of consumers distributed uniformly over the interval $[0, T]$ with unit density. Each consumer purchases at most one unit of either firm d 's product or firm f 's product. The higher a consumer's income parameter t , the higher is her (his) reservation price. Consumer t 's utility is given by equation (2) if good i is purchased.⁴ Consumers who do not purchase receive zero utility.

$$u_t = s_i t - p_i \quad (2)$$

The domestic government and firms d and f play a three-stage game⁵. In the first stage, the government sets an ad-valorem tariff on foreign imports. In the second stage, firms determine

²See e.g. Brander/Spencer 1984, Krishna 1989.

³These assumptions on costs are changed for the alternative model specifications introduced below.

⁴Consumers who do not purchase receive zero utility.

⁵In this formulation, firm i not entering the market is equivalent to firm i choosing $s_i = 0$. The entry decision by firms is made simultaneously when choosing quality.

qualities to be produced and incur costs c_i ($i = d, f$). In the third stage, firms choose prices simultaneously (Bertrand competition). Since the derivation of market equilibria is generally known and straightforward, it is relegated to the Appendix.

2.2. Alternative Model Specifications

Alternative model specifications vary predominantly with respect to the cost specification in equation (1.1). In model version 2, equation (1.1) is replaced by equation (1.2) below where both firms have to incur identical non-zero marginal costs of production (determined by parameter d) after paying a quality-dependent fixed costs.

$$c_i = b_i s_i^2 + d q_i \quad (1.2)$$

$$c_i = b_i s_i^2 + d_i q_i \quad (1.3)$$

$$c_i = b_i s_i^2 q_i \quad (1.4)$$

In model 3, equation (1.1) is replaced by equation (1.3), where firms' marginal costs of production d_i are different. In model 4 (equation (1.4)), firms do not incur fixed costs, but face quality-dependent marginal costs of production. In model 5, the cost equation (1.1) applies, but the government chooses a specific tariff instead of an ad-valorem tariff as instrument. Finally, model 6 is the special case of model 4 with covered markets. I.e., cost equation (1.4) applies and consumers are uniformly distributed over an interval $[t_0, T]$ such that $t_0 \geq p_0/s_0 > 0$ in the resulting market equilibrium.

2.3. General Results and Model Behavior

This section discusses some general results with respect to model behavior and its response to changes in the assumptions about market structure, conduct and costs as well as basic results about responses to taxes, subsidies and trade policy. These results build the interpretational framework applied to the simulations presented below.

The cost structure in combination with assumptions about the distribution of consumers as well as the form of last-stage market competition (Bertrand or Cournot) determines the structure of product qualities as well as firms' profits in equilibrium.⁶ Relative to Model 1 (the benchmark model), Cournot competition will reduce quality differentiation substantially. Similarly, the presence of variable costs will reduce quality differentiation, especially if these cost components rise with quality. In the benchmark model, the high-quality firm has substantially higher profits. A change of assumptions leading to less quality differentiation generally also leads to less profit differentiation. The benchmark model leads to identical rankings of qualities and firms' profits, respectively. Changes of product qualities induced by trade policy that lead to lower product differentiation will

⁶Results presented in Irmen/Thisse (1996) may suggest that the results carry over to the case of multiple quality attributes in the sense that they hold for one attribute while there will be no (significant) differentiation in all other attributes. Exploratory calculations also suggest that basic results about quality and profit differentiation may carry over to the N-firm case. However, this needs to be checked on a case-by-case basis. E.g. Cremer/Thisse (1991) or Scarpa (1996) suggest cases where the duopoly results do not apply in an N-firm framework.

generally reduce profits of both firms but increase their market shares. This is possible since market coverage is increased by this policy (absolutely more consumers purchase products) (Ronnén 1991, Lutz 1996). The ranking of firms' profits, however, remains unchanged. However, if the market is covered already in unregulated equilibria (see Shaked/Sutton 1982 for the appropriate condition), the same policy will lead to an increase of the market share of the low-quality firm and a decrease of the market share of the high-quality firm (Boon 1995, Crampes/Hollander 1995). Furthermore, in the benchmark model, the high-quality firm can increase its market share by lowering price without increasing total cost. This possibility is greatly reduced in the presence of variable costs. As a result, the case of market coverage and variable costs (model 6) quadratic in quality leads to identical profits and market shares for both firms (Crampes/ Hollander 1995). This means that the choice of higher quality does not any more entail a strategic advantage for the respective firm. Moreover, trade policy will now lead to overproportional losses of the high-quality firm.

Since the setup presented in this paper to analyze trade policy does not include a foreign market, it is largely comparable to the case of nonuniform taxes in Cremer/Thisse (1994). Their treatment of uniform taxes also provides some basis for the simulation results presented below. Their model setup corresponds to Model 6 presented here, i.e. covered markets, quality-dependent marginal costs and an ad-valorem tax. In an unregulated equilibrium, low quality is too low, high quality is too high, and quality differentiation is too high compared to a first-best allocation. A uniform tax decreases both qualities, both prices, and the degree of quality differentiation. A small uniform tax is welfare improving, since the procompetitive effect of decreasing product differentiation and the positive effect of reducing high quality overcompensates the negative effect of reducing low quality. With respect to the simulations presented below, this is somewhat like a combination of the effects of case 6.A. (where a tariff is levied on foreign high quality) and the effects of case 6.B. (where the tariff is on low quality). Allowing nonuniform taxes makes it possible to increase welfare from any given level of uniform taxes by increasing the tax on the low-quality product and decreasing the tax on the high-quality product. This corresponds to results of the simulations presented here, where a tariff on foreign low quality generally yields lower welfare increases than a tariff on foreign high quality.⁷

2.4. Simulations

Analytical solutions to the models introduced above are very cumbersome, mainly due to the presence of the tax-variables and variable cost components. However, without tax-variables (or when taxes are zero), analytical solutions for models 1 and 6 are easily obtained. These are presented in the Appendix.

The paper presents 12 simulations, two for each model alternative. A distinction is made between the case of low quality produced domestically (A) and high quality produced domestically (B). Thus, e.g., simulation 1.B shows the (benchmark) Model 1 where high quality is produced by the home firm. For models 1 through 5, market size equals $T=1$ and cost parameter $b=0.5$. In Model 2, both firms bear additional constant marginal costs of $d=0.004$. In Model 3, the marginal cost parameters are $d_H=0.005$ and $d_L=0$ for the high- and low-quality firm, respectively. In Model 6, the

market is covered and market size equals $T - t_0 = 0.4$ ($T = 1.1$, $t_0 = 0.7$), and $b = 2/3$. This parameter choice ensures a covered market for the relevant range of policies applied.

The results are summarized in 14 figures per simulation, showing domestic welfare, qualities, quality ratio, profits, consumer surplus, government revenue, prices, price/quality ratios, and quantities, respectively, where the tariff is gradually increased (on the horizontal axis) starting from the free-trade level.

Although analytical results are not presented, alternative calculations suggest that changes in parameters for each simulation (other than cost differences between firms) would not alter the qualitative results.

3. Taxing Foreign Competition

In this section, I review the simulation results. The qualitative results are grouped into five classes, each of which may be the outcome of one or more of the 12 simulations performed.

3.1. When an Industry Should Not Request Tariff Protection

In simulations 1.A, 2.A and 3.A, the foreign competition produces the higher quality and firms have to bear quality-dependent fixed costs. The tariff on the foreign firm induces a sharp reduction of foreign (high) quality in order to reduce cost and the adverse effect of the (ad-valorem) tariff. This is offset by an increase in quantity. Both effects increase competitive pressure on the home firm, which therefore reacts likewise by reducing quality and increasing quantity. Therefore, both firms' profits fall. The sharp reduction in quality differentiation results in reduced prices per unit of quality (and reduced absolute prices). However, the price reduction is not sufficient to offset the adverse effect of quality reduction on consumer surplus. The relatively high tariff revenues on the foreign firm's import are sufficient to offset the reductions in domestic profits and consumer surplus, so that a tariff can increase total domestic welfare. If the foreign firm incurs marginal costs in addition to fixed cost, it will still reduce quality substantially but may not increase quality.

3.2. Domestic Industry Gains from Protection at the Expense of Welfare

In simulations 1.B, 2.B and 3.B the foreign industry produces the low-quality good. This leads to roughly opposite effects when compared to the previous case. The foreign firm decreases quality, thereby reducing competition, which allows the domestic high-quality firm to simultaneously decrease quality but increase price. Foreign price decreases less than proportionally, leading to increased price per quality for both goods. Since quantities sold of both goods decrease also, consumers are substantially worse off. The receipts from taxing the foreign firm's relatively low import revenue are only a fraction of consumer losses. Even with domestic profit increases, they are not sufficient to offset consumer losses and reduced domestic welfare results.

⁷In three of the simulations, taxing foreign low quality will even lead to welfare decreases.

3.3. Revenue-Driven Welfare Increases due to Protection

In simulations 4.A and 5.A, the foreign competition produces the higher quality but tariffs have a less pro-competitive effect than in the simulations presented in Section 3.1. This makes these cases most comparable to the situation with Cournot competition presented in Herguera/Kujal/Petrakis (1995). A tariff leads to both quality downgrading and decrease of quantity for the foreign firm. The domestic low-quality firm can therefore react with increases in both quality and quantity. Consumer surplus is reduced since increases in low quality do not fully compensate for decreases in high quality. The main source of welfare improvement is government revenues from taxing imports.

3.4. Profit-Driven Welfare Increases due to Protection

In simulations 4.B, 5.B, and 6.B, the foreign firm produces low quality. A tariff on the foreign firm will lead to reduced foreign quality and quantity. The former allows the domestic firm to profitably reduce quality while the latter allows increases in quantity. This leads to substantial profit increases effectively overcompensating consumer surplus losses due to overall decreased qualities and increased quality-adjusted prices. Revenues from taxing relatively low imports contribute little to welfare.

3.5. A Case of Protection where Domestic Consumers Win!

In simulation 6.A, variable costs are quality-dependent and the market is covered. This leaves total quantity sold (of both qualities) unchanged as a result of a tariff. The foreign firm produces high quality. Since the domestic firm cannot gain additional market share at the low end of the market by reducing quality, it will now react on a reduction of high quality by increasing its own quality to gain market share in the center of the market from the foreign competitor. Therefore, the foreign firm will only insignificantly reduce quality (and price) and instead reduce quantity sold. The domestic firm now gains by both increasing quality and price, which also leads to a substantial reduction in quality differentiation. Consumers gain through reduced price per quality of the foreign good and through increased quality of the domestic good. As a result domestic welfare can be increased while making both consumers and the domestic industry better off!

3.6. More About Robustness

Herguera/Kujal/Petrakis (1995) show that Cournot competition will slightly alter some of the results due to the lower level of competition when compared to price competition in our benchmark simulation. For the case of a foreign high-quality firm, a tariff leads to both quality downgrading and loss of market share for the foreign firm. The domestic low-quality firm can therefore react with increases in both quality and market share. The important point here, is that the differences in results are due to reduced price competition and not to the Cournot case per se. For that reason, the results

of simulations 4.A. and 5.A. are comparable to those in Herguera/Kujal/Petrakis, where competitive pressure is lower than in the benchmark because of quality-dependent variable costs in the former and because of using specific tariffs in the latter case, respectively.

3.7. Discussion

The notion that taxing foreign competition leads to quality-downgrading seems, at first glance, to be counterintuitive as well as not to be supported by empirical evidence. The standard case cited is the development of the US car market during the 1980s, where Japanese imports were subjected to both quantity constraints and tariffs. However, Japanese car manufacturers reacted by quality upgrading.

To my knowledge, there is no closure yet on the debate whether quality upgrading was induced by tariffs, VERs, or a combination of both. Goldberg (1992, 1994) performed trade-policy simulations using an econometric model of US car demand, coming to the conclusion that quotas lead to quality upgrading, while tariffs might lead to downgrading. Since the quotas on Japanese cars were severely binding, observed upgrading does not necessarily force the conclusion that tariffs must have had that effect. This interpretation could also be supported theoretically based on Herguera/Kujal/Petrakis.

4. Conclusions

The purpose of this paper was to demonstrate that the direction of international vertical differentiation can be a major determinant of the effectiveness of trade policy. This was demonstrated for the case of tariffs. However, the results are likely to hold for any policy that has similar effects on quality differentiation and market shares. The simulation results were presented graphically and interpreted in accordance with existing analytical results.

The method of simulations was chosen, since more intuitive insights are likely to be gained from the obtained graphical solutions than from lengthy and complicated analytical expressions. Exploratory alternative calculations as well as the consistency of the conclusions with the literature suggest robustness of the results for the tariff case as well as their likely applicability to many cases with other policy instruments.

Literature

- Boom, A. (1995). "Asymmetric International Minimum Quality Standards and Vertical Differentiation," Journal of Industrial Economics, Vol. 43(1), pp. 101-119.
- Brander, J. A. and P. R. Krugman (1983). "A Reciprocal Dumping Model of International Trade," Journal of International Economics, Vol. 15, pp. 313-323.
- Brander, J. A. and B. J. Spencer (1984). "Tariff Protection and Imperfect Competition," in: H. Kierzkowski (ed.) Monopolistic Competition and International Trade (Clarendon Press, Oxford).
- Crampes, C. and A. Hollander (1995). "Duopoly and Quality Standards," European Economic Review, Vol. 39, pp. 71-82.
- Cremer, H. and J.-F. Thisse (1994). "Commodity Taxation in a Differentiated Oligopoly," International Economic Review, Vol. 35(3), pp. 613-633.
- ____ (1991). "Location Models of Horizontal Differentiation: A Special Case of Vertical Differentiation Models," Journal of Industrial Economics, Vol. 39(4), pp. 383-390.
- Feenstra, R. C. (1993). "Measuring the Welfare Effect of Quality Change: Theory and Application to Japanese Autos," NBER Discussion Paper No. 4401.
- Gabszewicz, J. J. and J.-F. Thisse (1979). "Price Competition, Quality and Income Disparities," Journal of Economic Theory, Vol. 20, pp. 340-359.
- Goldberg, P. K. (1994). "Trade Policies in the U.S. Automobile Industry," Japan and the World Economy, Vol. 6(2), pp. 175-208.
- ____ (1991). "Product Differentiation and Oligopoly in International Markets: The Case of the U.S. Automobile Industry," mimeo., Princeton University.
- Herguera, I., Kujal, P. and E. Petrakis (1995). "Endogenous Quality, Non-Credible Policies and Leapfrogging," mimeo., Universidad Carlos III de Madrid.
- Irmen, A. and J.-F. Thisse (1996). "Competition in Multi-Characteristics Spaces: Hotelling was Almost Right," CEPR Discussion Paper No. 1446.
- Krishna, K. (1989). "Trade Restrictions as Facilitating Practices," Journal of International Economics, Vol. 26, pp. 251-270.
- Levinsohn, J. (1988). "Empirics of Taxes on Differentiated Products: The Case of Tariffs in the U.S. Automobile Industry," in: R. Baldwin (ed.) Trade Policy Issues and Empirical Analysis (NBER, Chicago).
- Lutz, S. (1996). "Vertical Product Differentiation, Quality Standards, And International Trade Policy," CEPR Discussion Paper No. 1443.
- Menzler-Hokkanen, I. (1994). "Empirical Comparisons of Quality Measures in International Trade," in: Quality Change and Competitiveness in International Trade (Helsinki School of Business Administration, Helsinki).
- Mintz, I. (1973). "U.S. Import Quotas: Cost and Consequences," American Enterprise Institute for Public Policy Research.
- Mussa, M. and S. Rosen (1978). "Monopoly and Product Quality," Journal of Economic Theory, Vol. 18, pp. 301-317.

- Ronnen, U. (1991). "Minimum Quality Standards, Fixed Costs, and Competition," Rand Journal of Economics, Vol. 22(4), pp. 490-504.
- Scarpa, C. (1996). "Quality Standards in a Vertically Differentiated Oligopoly," International Journal of Industrial Organization, forthcoming.
- Shaked, A. and J. Sutton (1982). "Relaxing Price Competition Through Product Differentiation," Review of Economic Studies, Vol. 49, pp. 3-13.

Appendix

(All calculations are available upon request.)

A.1. The Benchmark Model

This appendix demonstrates the derivation of the market equilibria for the model presented in Section 2.1. Firms d and f play a two-stage game⁸. In the first stage, firms determine qualities to be produced and incur costs c_i ($i = d, f$). In the second stage, firms choose prices simultaneously.⁹

Price Competition

To solve the game, consider first the demand faced by the high-quality and low-quality firm, respectively. Let h and o stand for high and low quality, respectively. These demands are then given by:¹⁰

$$q_h = T - \left(\frac{p_h - p_o}{s_h - s_o} \right), \quad q_o = \frac{p_h - p_o}{s_h - s_o} - \frac{p_o}{s_o} \quad (\text{A.3.1})$$

Let $i = h, o$; let $j \neq i$. The profit function for firm i is given by $\Pi_i = p_i q_i(p_i, p_j, s_i, s_j) - c_i(s_i)$. Taken both qualities as given, the price reaction functions in each market are given as the solutions to the first order conditions. Solving the resulting equations for both prices, equilibrium prices are then given as:

$$p_h = \frac{2Ts_h(s_h - s_o)}{4s_h - s_o}, \quad p_o = \frac{T(s_h - s_o)s_o}{4s_h - s_o} \quad (\text{A.4.1})$$

Note that for all $s_h > s_o$, $T > t_h > t_o > 0$ will hold, *i.e.*, equation (A.4.1) is in fact an unconstrained price equilibrium.

Given the price equilibrium depicted above, demands and thus profits can be expressed in terms of qualities. For positive qualities s_j ($i = h, o$), these profit functions are:

$$\Pi_h = \frac{4T^2 s_h^2 (s_h - s_o)}{(4s_h - s_o)^2} - b_h s_h^2, \quad \Pi_o = \frac{T^2 s_h (s_h - s_o) s_o}{(4s_h - s_o)^2} - b_o s_o^2 \quad (\text{A.5.1})$$

⁸In this formulation, firm i not entering the market is equivalent to firm i choosing $s_i = 0$. The entry decision by firms is made simultaneously when choosing quality.

⁹To derive solutions, we will use the concept of subgame-perfect equilibrium, computing the solutions for each stage in reverse order. Both firms choose their respective product quality from the same interval $[0, \infty)$. The resulting market equilibria will include some consumers in the lower segment of the interval $[0, T]$ not valuing quality enough to buy any product. This guarantees an interior solution of the price game.

¹⁰Let $t_h = (p_h - p_o)/(s_h - s_o)$ and $t_o = p_o/s_o$. Consumers with $t = p_o/s_o$ will be indifferent between buying the low-quality product and not buying at all. Consumers with $t = (p_h - p_o)/(s_h - s_o)$ will be indifferent between buying either the high-quality or the low-quality product. Consumers with $T \geq t > t_h$ will buy high quality, consumers with $t_h > t > t_o$ will buy low quality, and consumers with $t < p_o/s_o$ will not buy at all.

Similarly, consumer surplus¹¹ can be expressed in the following way:

$$CS = \frac{T^2 s_h^2 (4s_h + 5s_o)}{2(-4s_h + s_o)^2} \quad (\text{A.6.1})$$

Properties of the Revenue and Consumer Surplus Functions

Let R_i denote firm i 's revenue function. Let h and o denote high and low quality, respectively.

$$\frac{\partial R_h}{\partial s_h} \geq 0; \quad \frac{\partial R_o}{\partial s_o} \geq 0 \text{ for } s_o \leq \frac{4s_h}{7}; \quad \frac{\partial R_h}{\partial s_o} < 0, \quad \frac{\partial R_o}{\partial s_h} > 0; \quad (\text{A.7.1})$$

$$\frac{\partial^2 R_h}{\partial s_h^2} \leq 0; \quad \frac{\partial^2 R_o}{\partial s_o^2} \leq 0; \quad \frac{\partial^2 R_h}{\partial s_h \partial s_o} > 0; \quad \frac{\partial^2 R_o}{\partial s_o \partial s_h} > 0.$$

Let CS_l ($l = D, F$) denote region l 's consumer surplus function. Firms' qualities are denoted by s_h and s_o for high and low quality, respectively.

$$\frac{\partial CS_l}{\partial s_h} > 0 \text{ for } s_o < \frac{4s_h}{5}; \quad \frac{\partial CS_l}{\partial s_o} > 0; \quad \frac{\partial^2 CS_l}{\partial s_h^2} > 0; \quad \frac{\partial^2 CS_l}{\partial s_o^2} > 0; \quad \frac{\partial^2 CS_l}{\partial s_o \partial s_h} < 0.$$

Quality Competition

To derive the firms' quality best responses, we investigate each firm's profit function, given the other firm's quality choice, and taking into account the behavior in the price-setting subgame. Given the order of qualities, the profit functions in equations (A.5.1) are concave in the respective firm's own quality. The profit-maximizing choices form a Nash-equilibrium in qualities, where both marginal profit functions evaluate to zero. The first order conditions for the high and low quality firm, respectively, are then given as:

$$4T^2 s_h (4s_h^2 - 3s_h s_o + 2s_o^2) / (4s_h - s_o)^3 = 2b_h s_h \quad (\text{A.9.1})$$

$$T^2 s_h^2 (4s_h - 7s_o) / (4s_h - s_o)^3 = 2b_o s_o$$

The slopes of the high and low quality firms' quality best responses can be calculated (using the implicit function theorem) as $ds_i/ds_j = -(\partial(\partial\Pi_i/\partial s_j)/\partial s_j)/(\partial(\partial\Pi_i/\partial s_i)/\partial s_i)$, where i is either high or low quality and j is the other quality. Both slopes are positive, but less than one.

From the properties of the revenue functions and the slopes of the quality best responses, it can be derived that the two qualities are strategic complements. Furthermore, a forced increase of the low quality will reduce product differentiation and increase price competition.

¹¹Consumer surplus is defined as $\{\int (t^* s_h - p_h) dt + \int (t^* s_o - p_o) dt\}$ where the first integral goes from t_h to T and the second goes from t_o to t_h .

Divide the first order conditions given in (A.9), rearrange and write $s_h = r s_o$ and $b_o = a b_h$ to obtain:

$$\frac{4(2-3r+4r^2)}{4r^2-7r} = \frac{r}{a}$$

For $a=1$ (i.e. $b_o = b_h = b$) $r = 5.25123$ while for $a=2$ (i.e. $b_o = 2 b_h = 2 b$) $r = 9.14152$. Using r to express s_h in terms of s_o and substituting for s_h in the first equation of (A.9.1) allows for calculating the equilibrium qualities for any given value of T and b . (However, the ratio of cost parameters a must be fixed.)

The resulting equilibrium qualities for identical firms (i.e. $b_h = b_o = b$) are then:¹²
 $s_h = 0.126655 T^2 / b$ and $s_o = 0.0241192 T^2 / b$

The resulting equilibrium profits for identical firms (i.e. $b_h = b_o = b$) are then:
 $\Pi_h = 0.012219 T^4 / b$ and $\Pi_o = 0.0007637 T^4 / b$

A.2. Model 6: Variable Costs and Covered Markets

This appendix demonstrates the derivation of the market equilibria for Model 6 presented in Section 2.2.¹³ Firms d and f play a two-stage game. In the first stage, firms determine qualities to be produced and incur costs c_i ($i = d, f$). In the second stage, firms choose prices simultaneously. Cost is determined by equation (1.4) and consumers are uniformly distributed over an interval $[t_o, T]$ such that $t_o \geq p_o/s_o > 0$ in the resulting market equilibrium.¹⁴

Price Competition

To solve the game, consider first the demand faced by the high-quality and low-quality firm, respectively. Let h and o stand for high and low quality, respectively. These demands are then given by:

$$q_h = T - \left(\frac{p_h - p_o}{s_h - s_o} \right), \quad q_o = \frac{p_h - p_o}{s_h - s_o} - t_o \quad (\text{A.3.2})$$

Let $i = h, o$; let $j \neq i$. The profit function for firm i is given by $\pi_i = p_i q_i(p_i, p_j, s_i, s_j) - c_i(s_i)$. Taken both qualities as given, the price reaction functions in each market are given as the solutions to the first order conditions. Solving the resulting equations for both prices, equilibrium prices are then given as:

$$\begin{aligned} p_h &= [2c(s_h) + c(s_o) + (2T - t_o)(s_h - s_o)], \\ p_o &= [c(s_h) + 2c(s_o) + (2t_o - T)(s_h - s_o)] \end{aligned} \quad (\text{A.4.2})$$

¹²Note that T^2/b enters in a multiplicative way and therefore does not affect the calculations.

¹³See also Crampes/Hollander (1995).

¹⁴See Boom (1995, p. 104) and Shaked/Sutton (1982, p. 4f) for the condition for covered markets.

Given the price equilibrium depicted above, demands and thus profits can be expressed in terms of qualities. For positive qualities s_i ($i = h, o$), these profit functions are:

$$\Pi_h = \frac{4t^2 s_h^2 (s_h - s_o)}{(4s_h - s_o)^2} - b_h s_h^2, \quad \Pi_o = \frac{1}{9(T - t_o)} (s_h - s_o)(g + T - 2t_o)^2 \quad (\text{A.5.2})$$

where $g = [c(s_h) - c(s_o)](s_h - s_o)$ for $s_h > s_o$.

Quality Competition

To derive the firms' quality best responses, we investigate each firm's profit function, given the other firm's quality choice, and taking into account the behavior in the price-setting subgame. Given the order of qualities, the profit functions in equations (A.5.2) are concave in the respective firm's own quality. The profit-maximizing choices form a Nash-equilibrium in qualities, where both marginal profit functions evaluate to zero. The first order conditions for the high and low quality firm, respectively, are then given as:

$$\begin{aligned} 2T - t_o + g(s_h, s_o) - 2c'(s_h) &= 0 \\ 2t_o - T + g(s_h, s_o) - 2c'(s_o) &= 0 \end{aligned} \quad (\text{A.9.2})$$

The slopes of the high and low quality firms' quality best responses can be calculated (using the implicit function theorem) as $ds_i/ds_j = -(\partial(\partial\Pi_i/\partial s_j)/\partial s_j)/(\partial(\partial\Pi_i/\partial s_i)/\partial s_i)$, where i is either high or low quality and j is the other quality.

Equilibrium qualities can be calculated for any given value of T , t_o and b . (However, the ratio of cost parameters a must be fixed.)

The resulting equilibrium qualities for identical firms (i.e. $b_h = b_o = b$) are then:

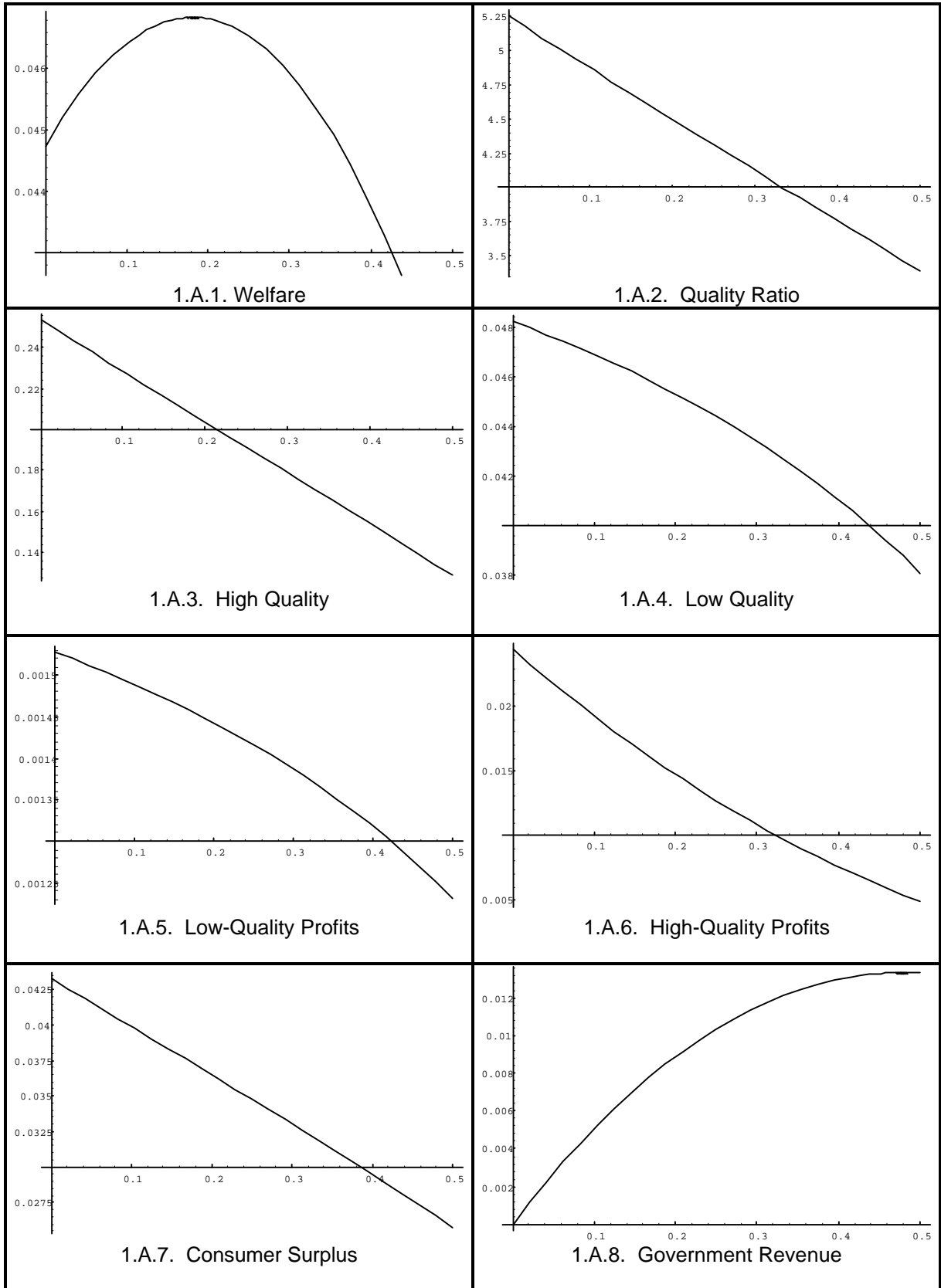
$$s_h = (5T - t_o)/(8b) \text{ and } s_o = (5t_o - T)/(8b)$$

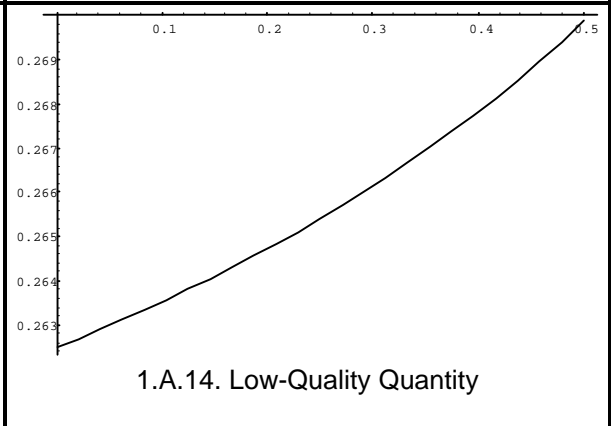
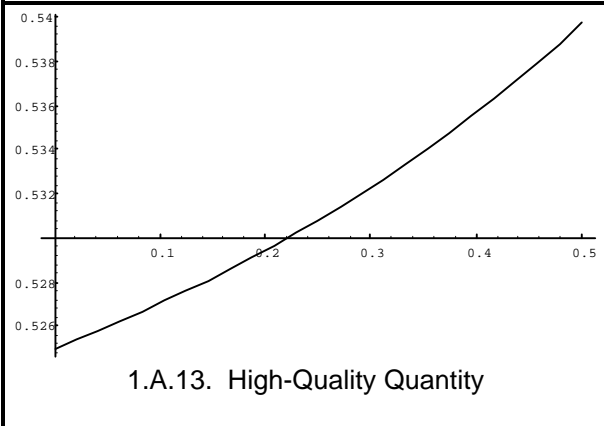
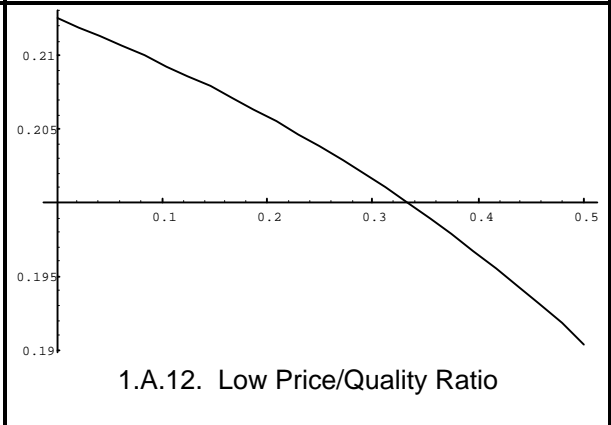
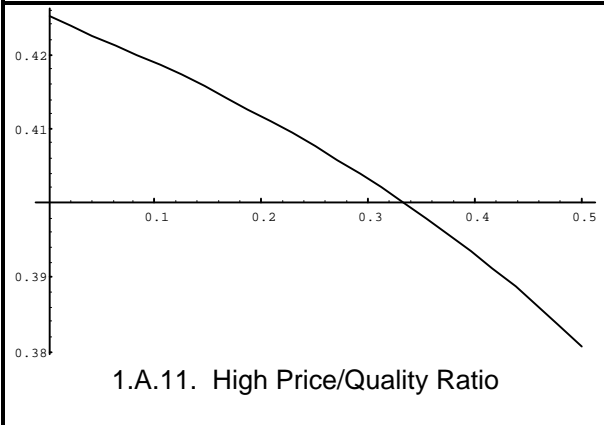
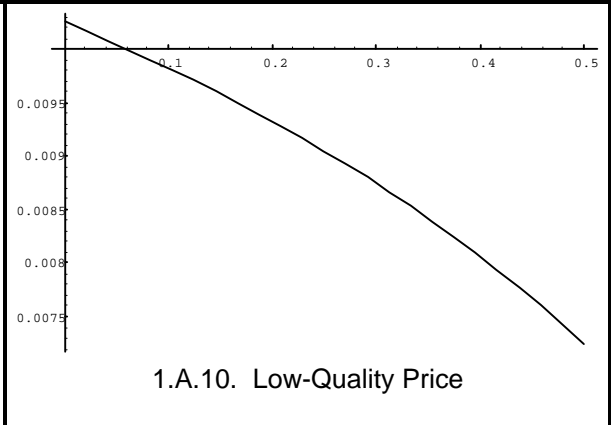
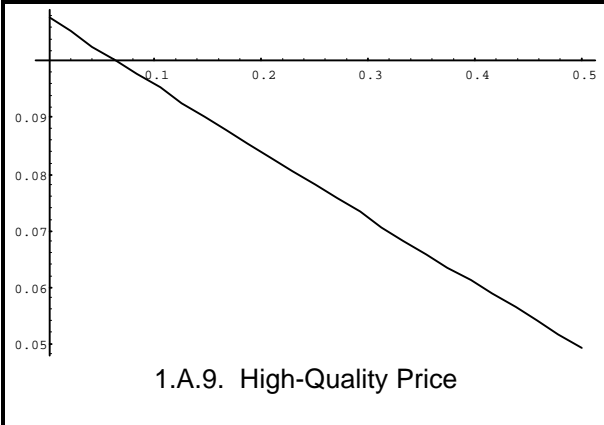
where

$$s_h/s_o = (5T - t_o)/(5t_o - T).$$

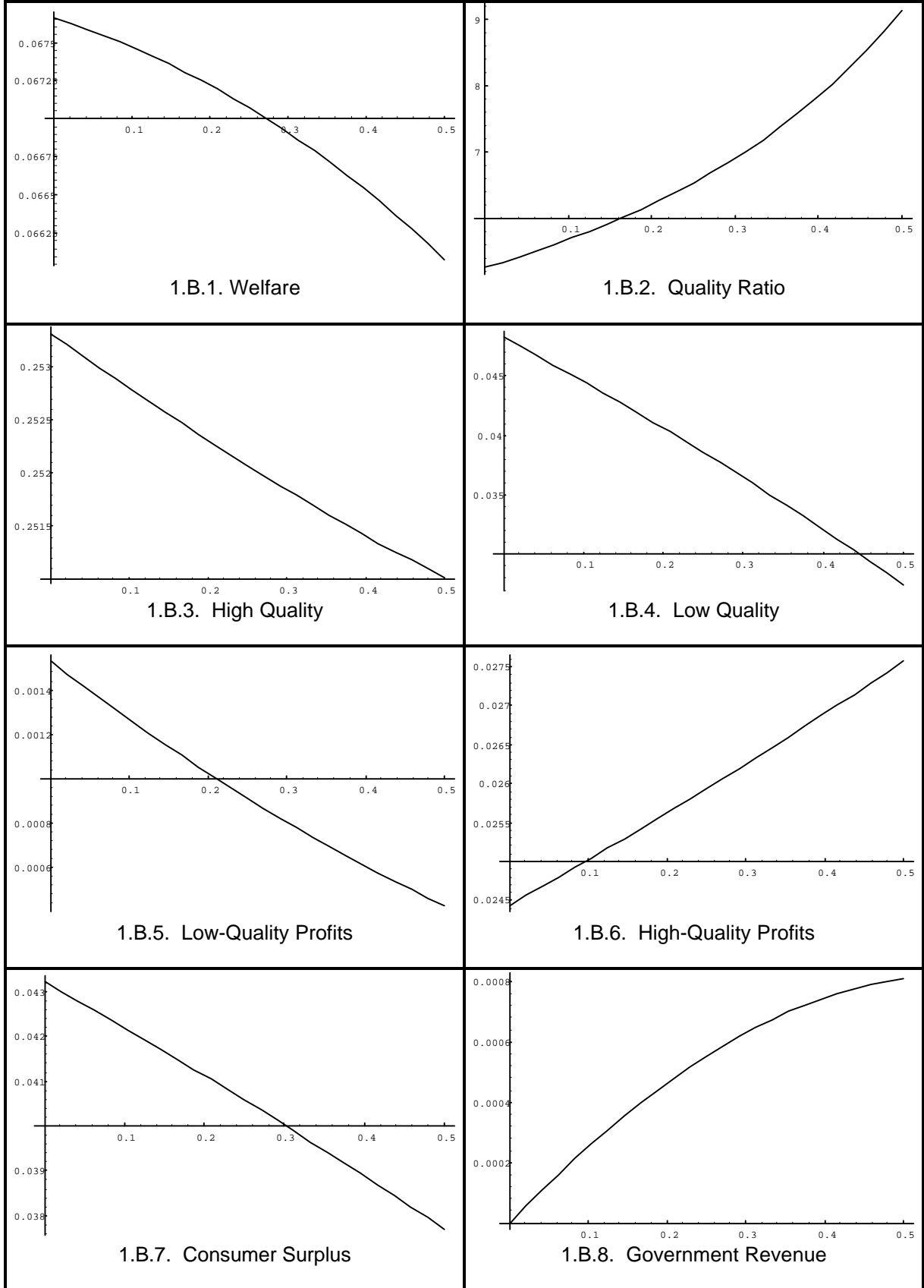
Figures

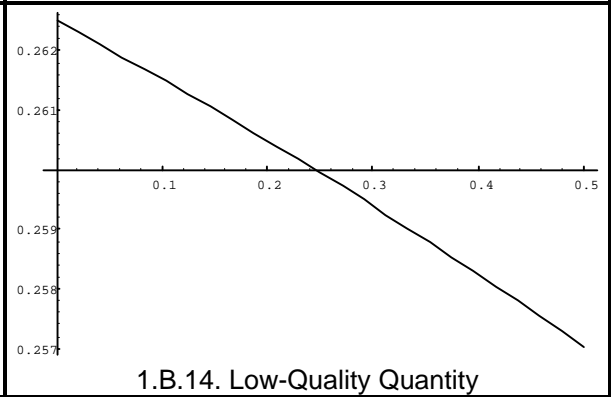
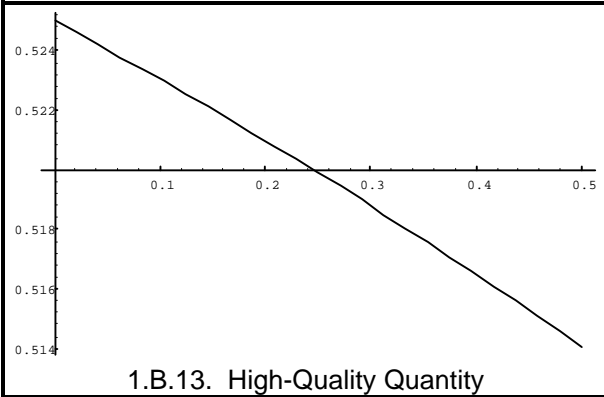
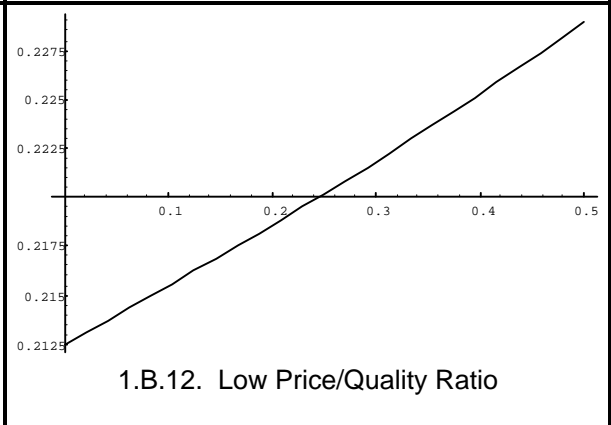
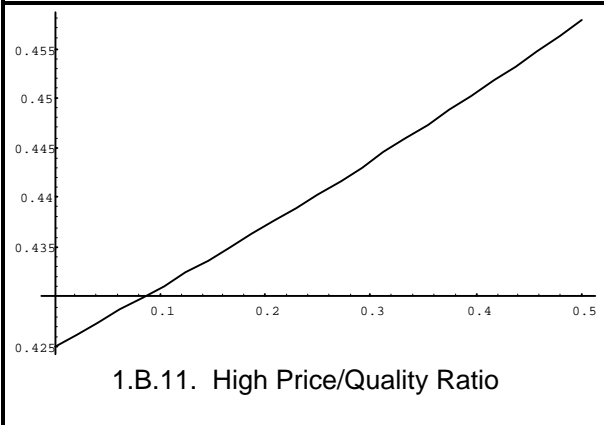
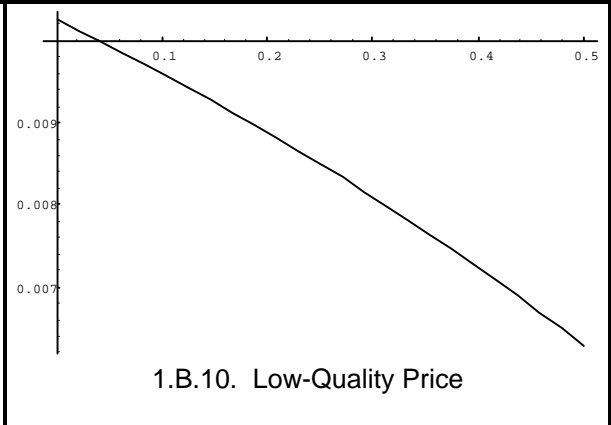
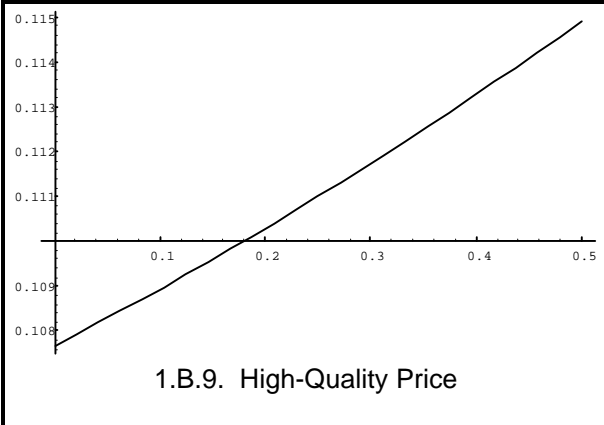
Case 1.A. Quality-Dependent Fixed Costs without Variable Costs (Foreign High-Quality Firm)



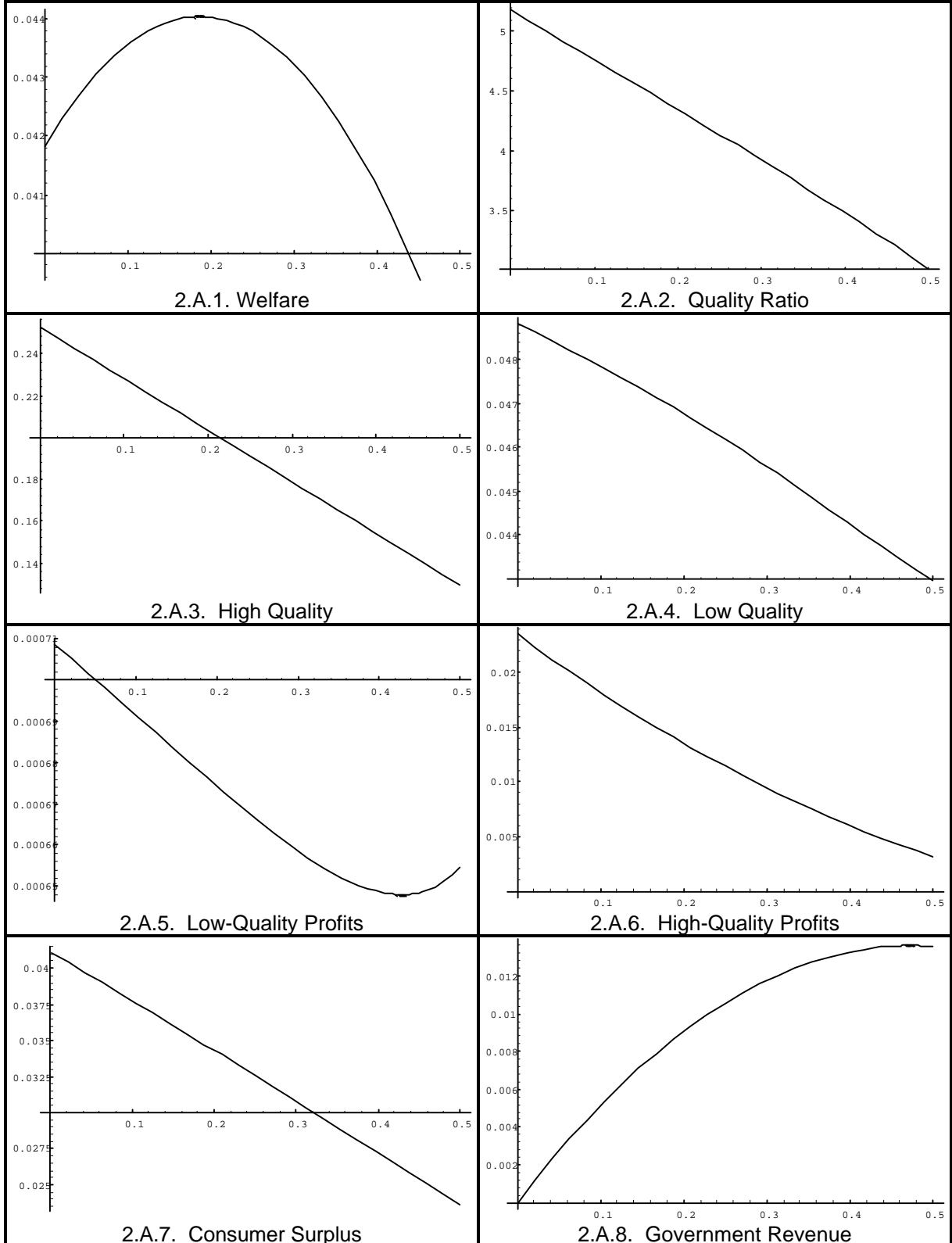


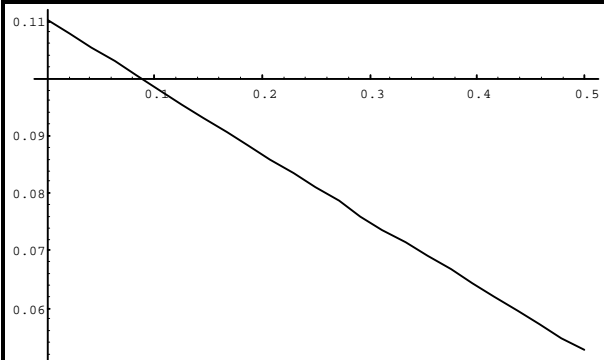
Case 1.B. Quality-Dependent Fixed Costs without Variable Costs
(Foreign Low-Quality Firm)



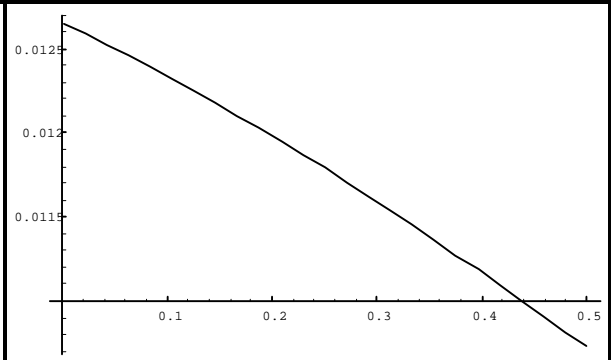


Case 2.A. Quality-Dependent Fixed Costs with Equal Variable Costs
(Foreign High-Quality Firm)

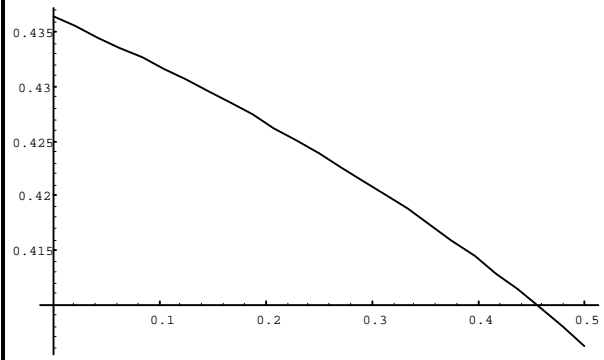




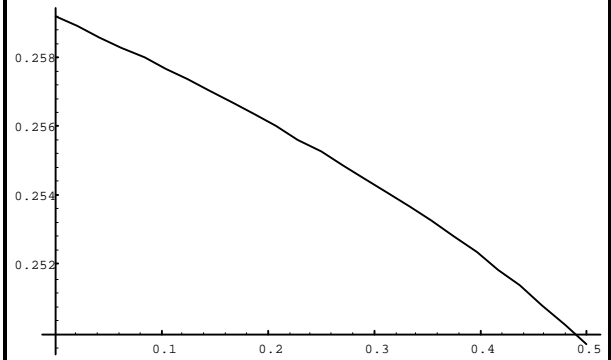
2.A.9. High-Quality Price



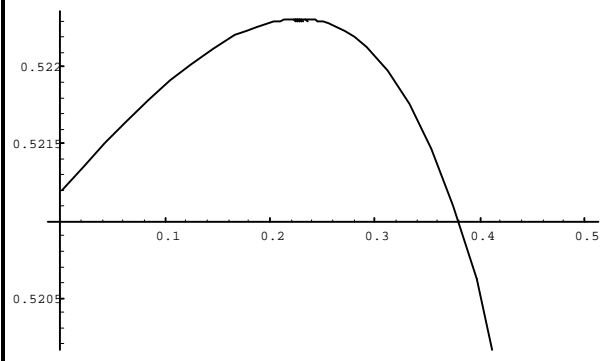
2.A.10. Low-Quality Price



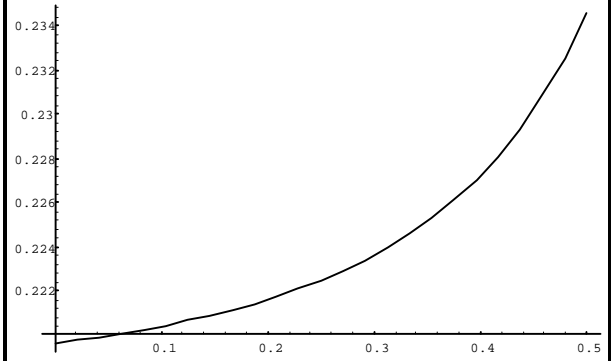
2.A.11. High Price/Quality Ratio



2.A.12. Low Price/Quality Ratio

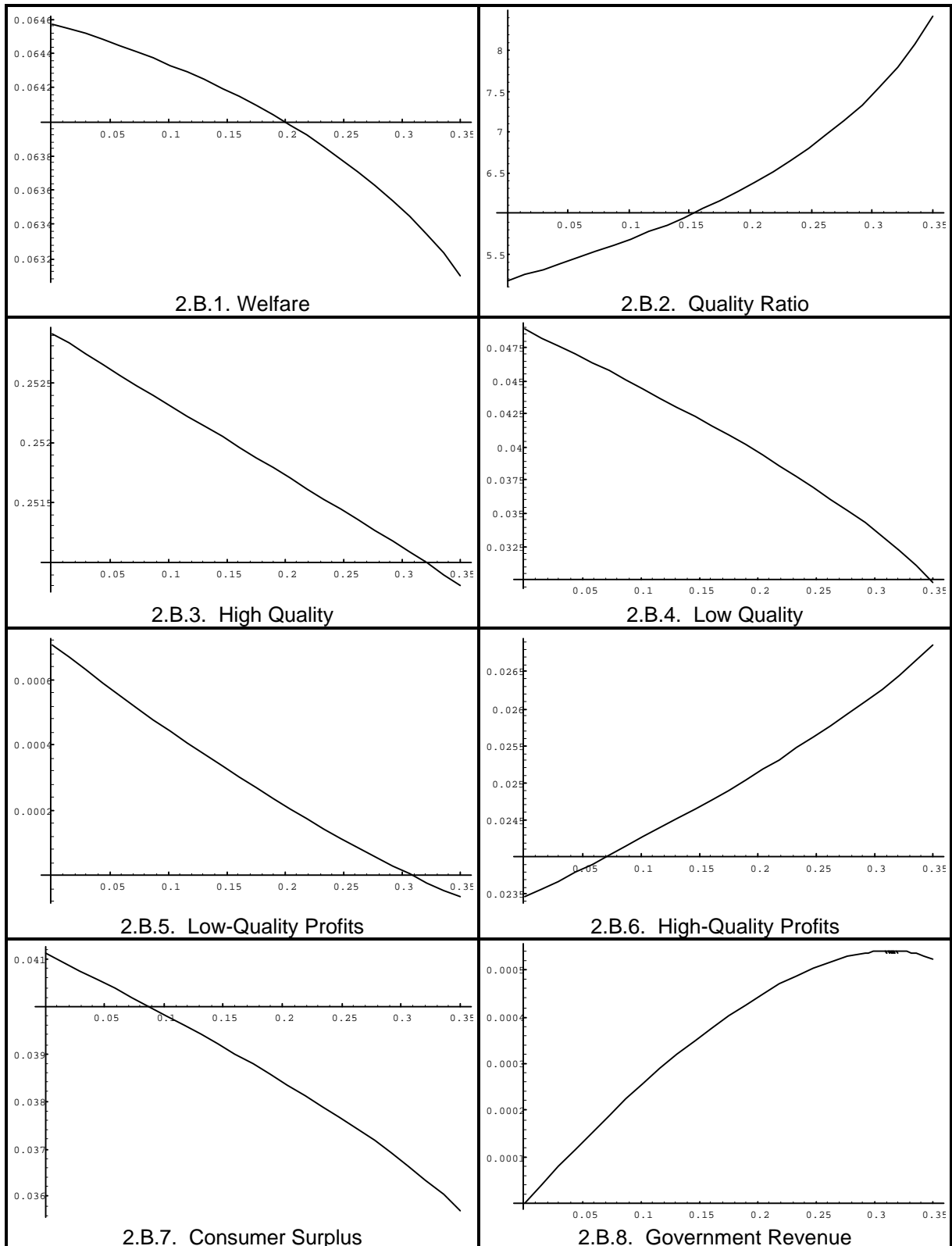


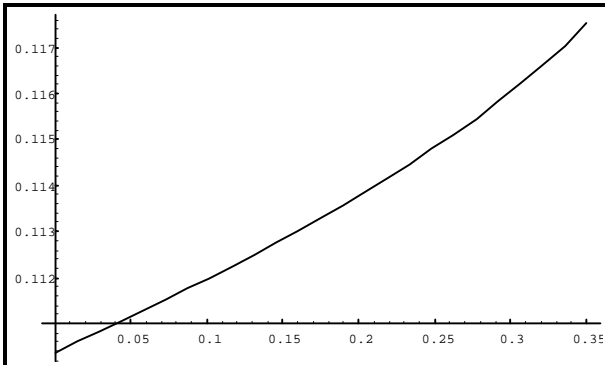
2.A.13. High-Quality Quantity



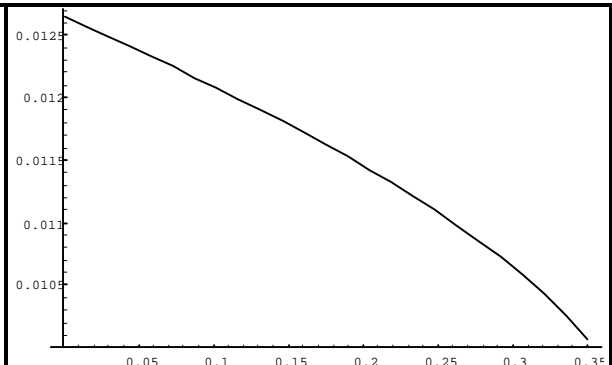
2.A.14. Low-Quality Quantity

Case 2.B. Quality-Dependent Fixed Costs with Equal Variable Costs
(Foreign Low-Quality Firm)

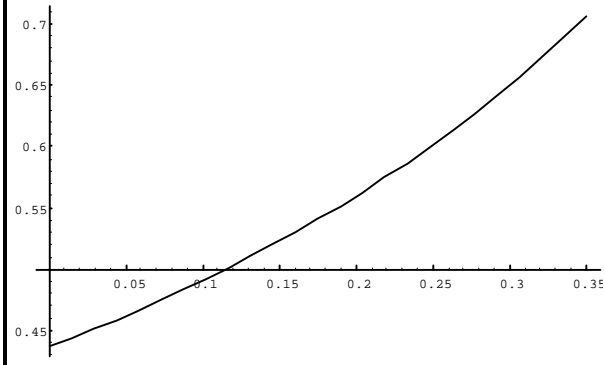




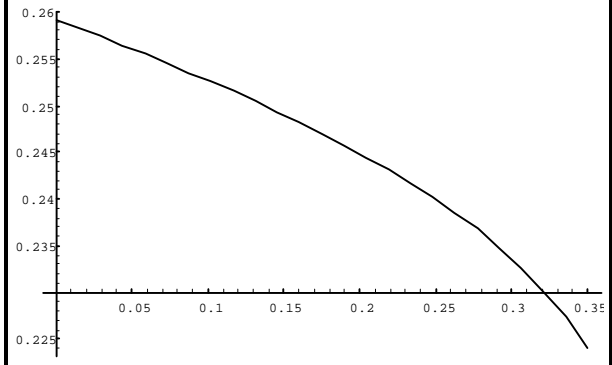
2.B.9. High-Quality Price



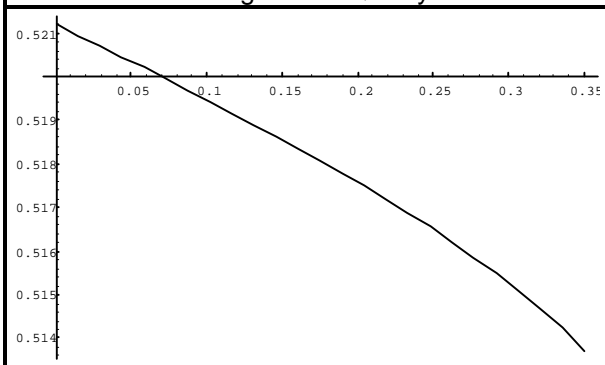
2.B.10. Low-Quality Price



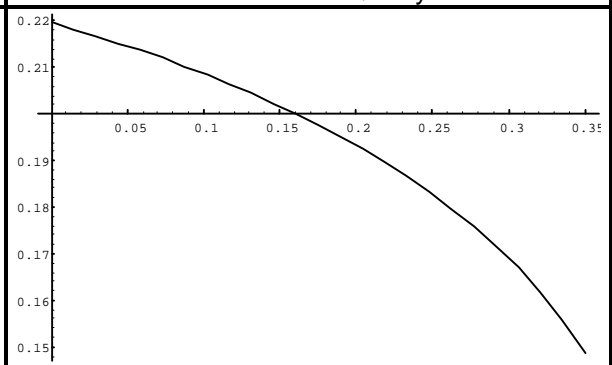
2.B.11. High Price/Quality Ratio



2.B.12. Low Price/Quality Ratio

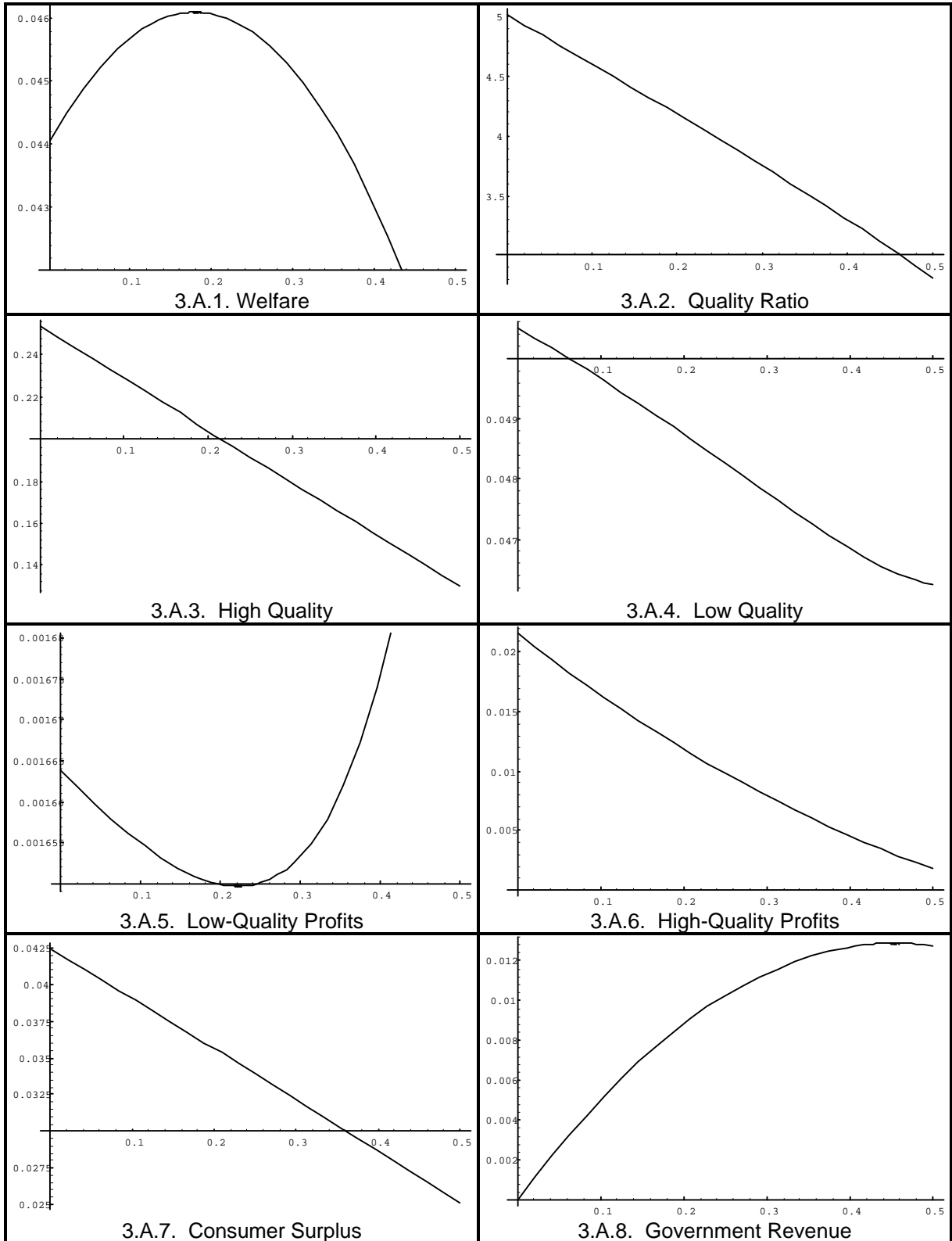


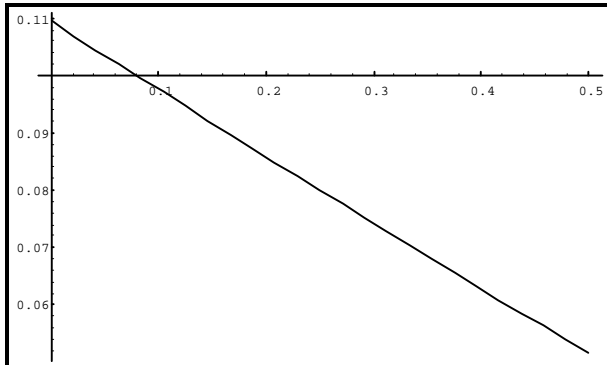
2.B.13. High-Quality Quantity



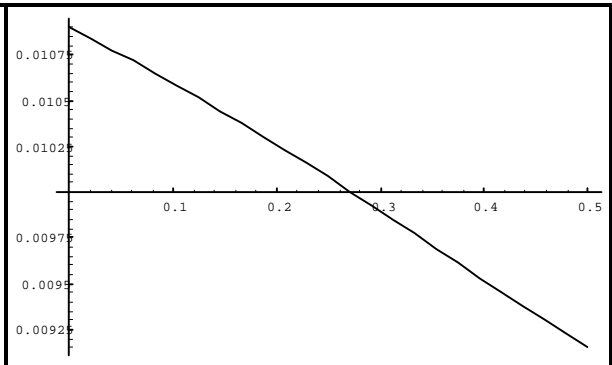
2.B.14. Low-Quality Quantity

Case 3.A. Quality-Dependent Fixed Costs with Unequal Variable Costs
(Foreign High-Quality Firm)

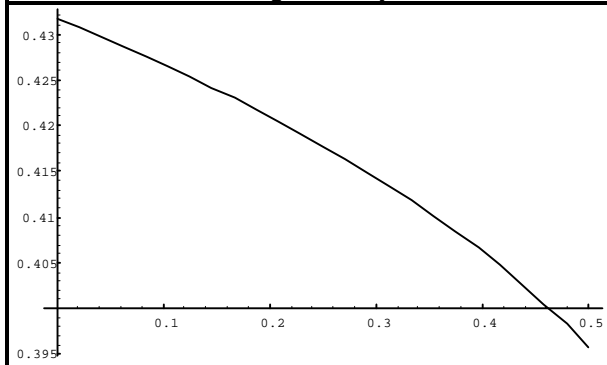




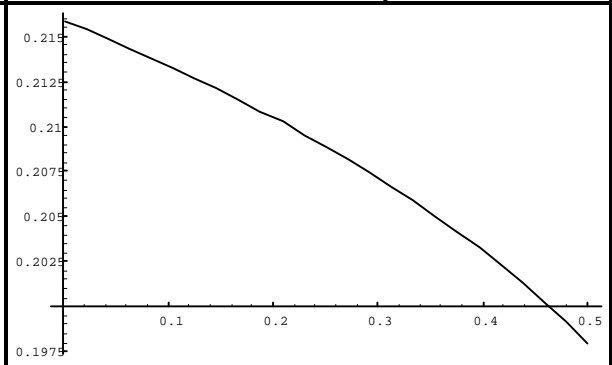
3.A.9. High-Quality Price



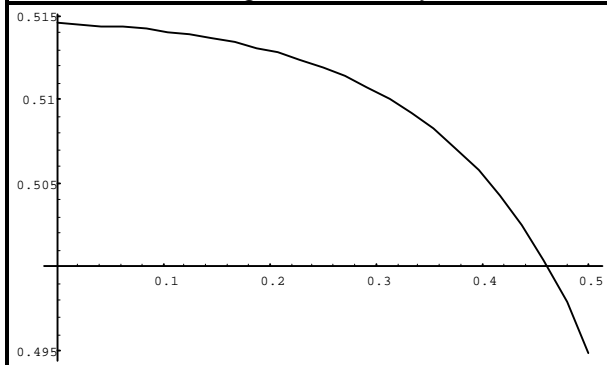
3.A.10. Low-Quality Price



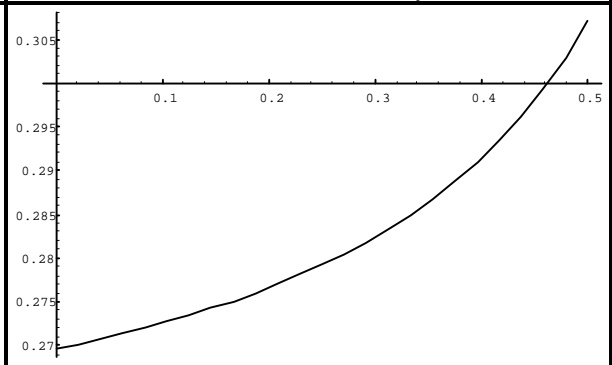
3.A.11. High Price/Quality Ratio



3.A.13. Low Price/Quality Ratio

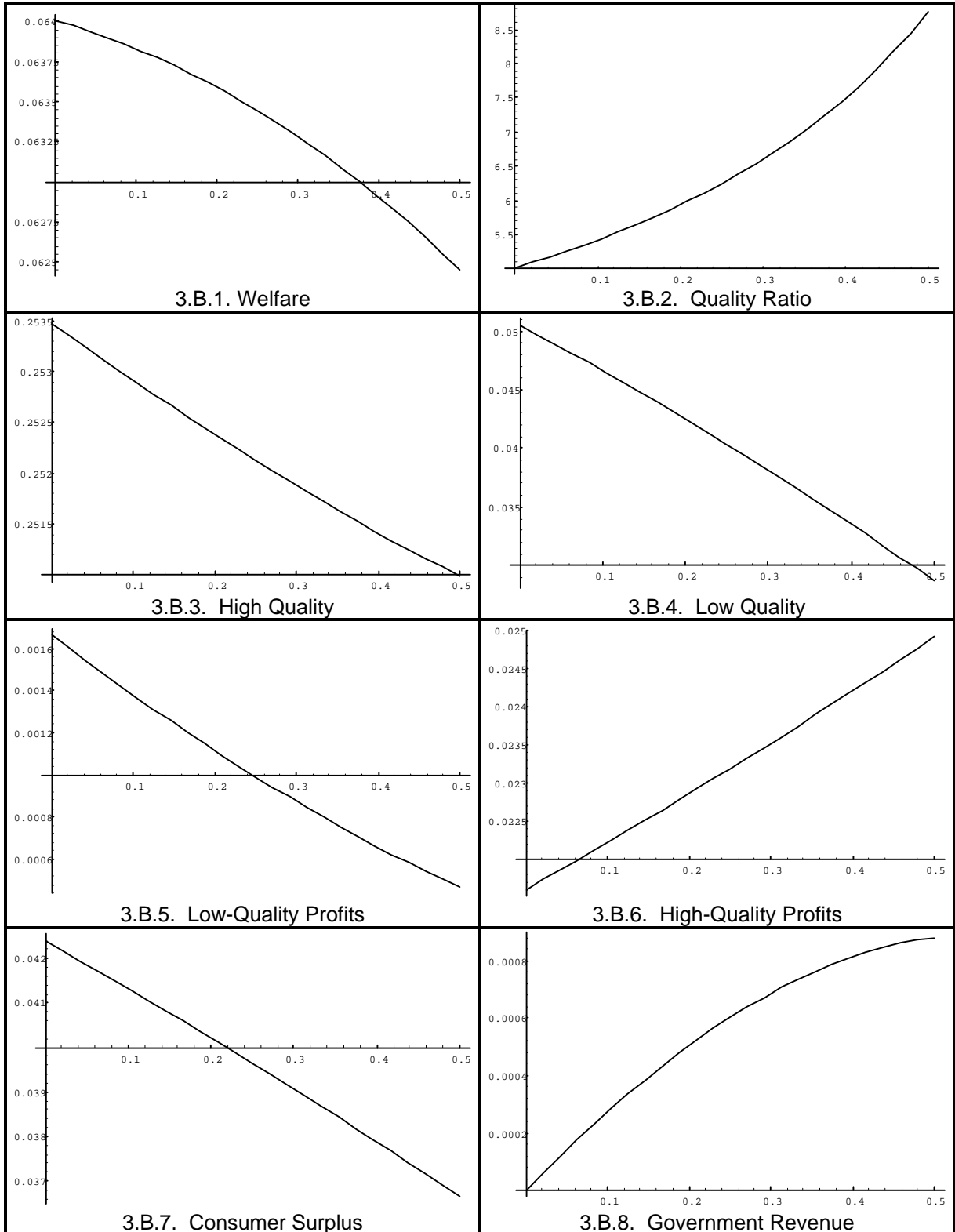


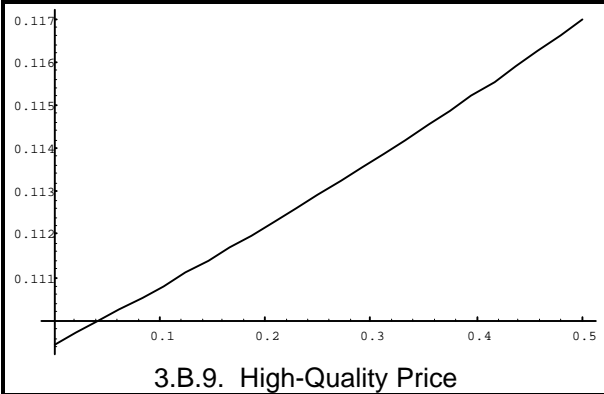
3.A.13. High-Quality Quantity



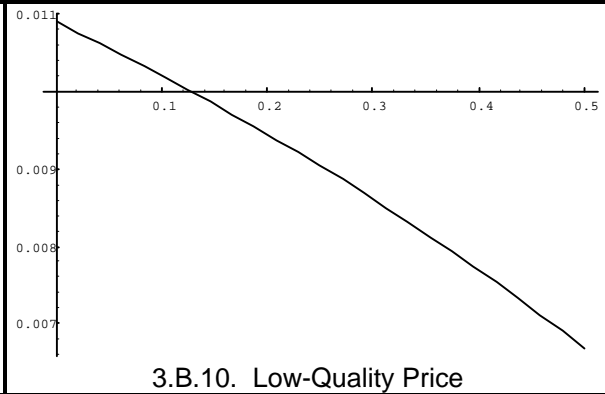
3.A.14. Low-Quality Quantity

Case 3.B. Quality-Dependent Fixed Costs with Unequal Variable Costs
(Foreign Low-Quality Firm)

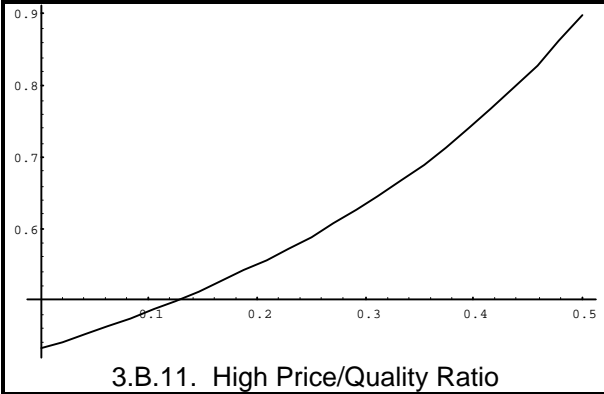




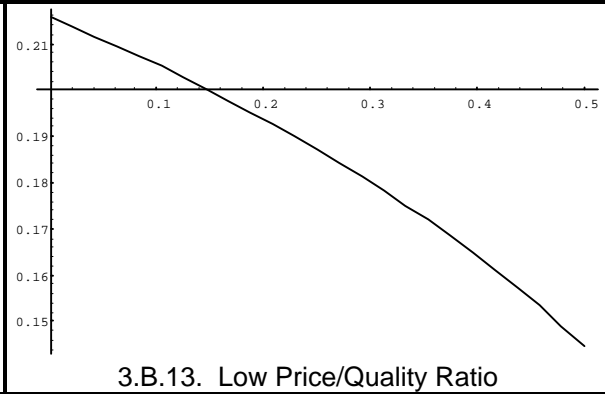
3.B.9. High-Quality Price



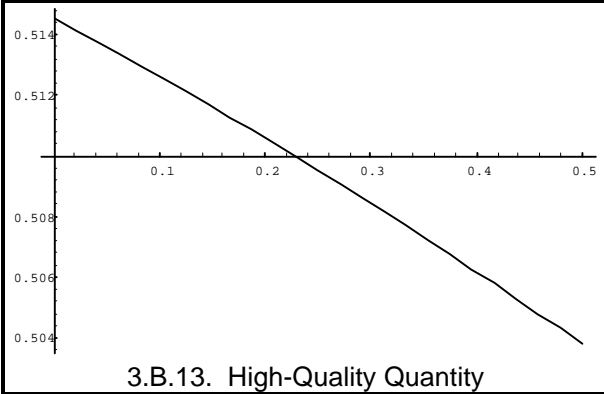
3.B.10. Low-Quality Price



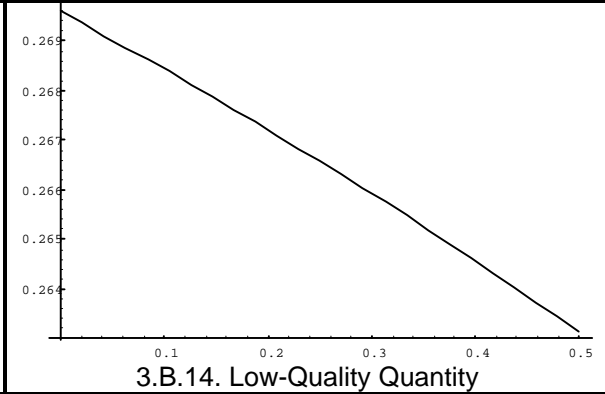
3.B.11. High Price/Quality Ratio



3.B.13. Low Price/Quality Ratio

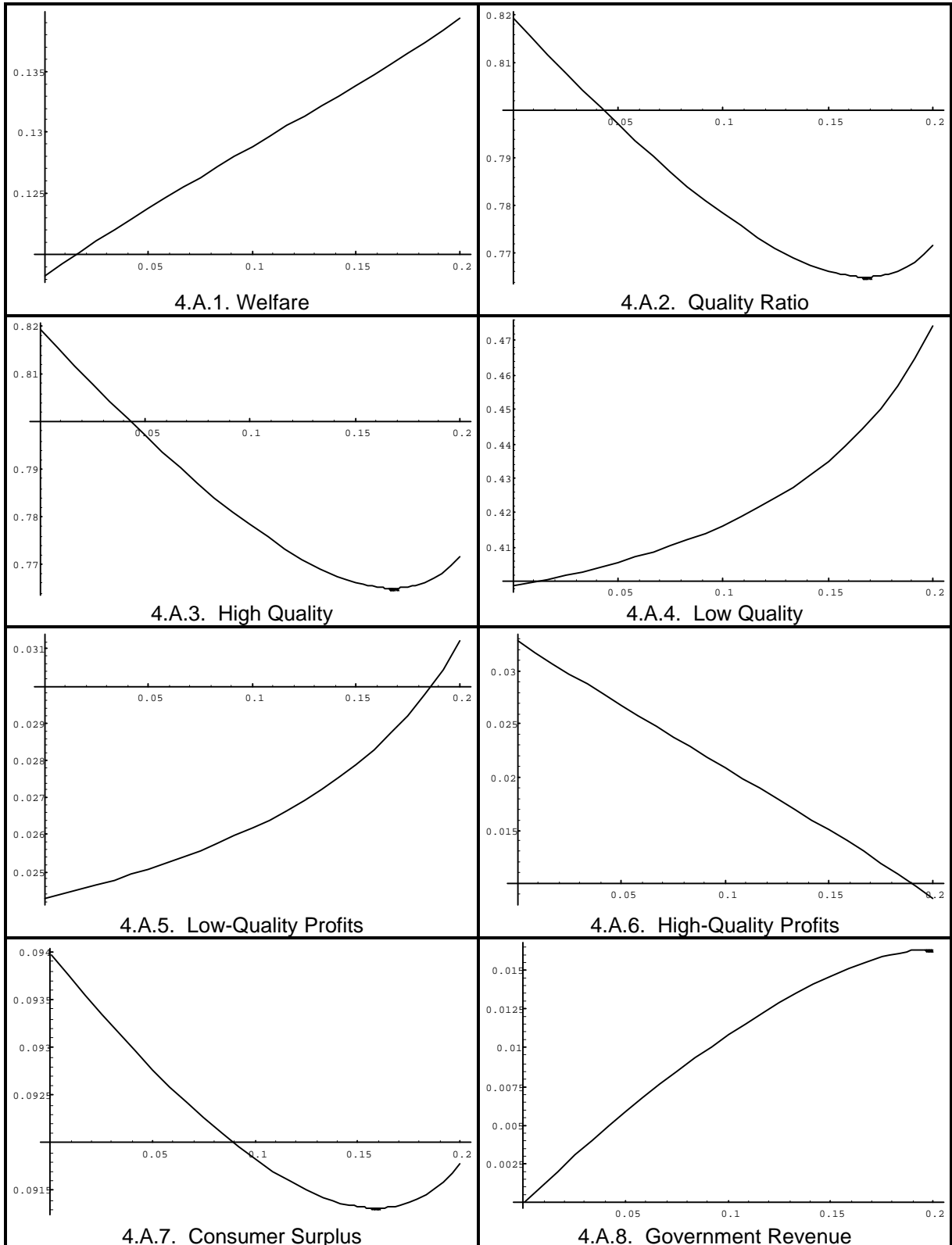


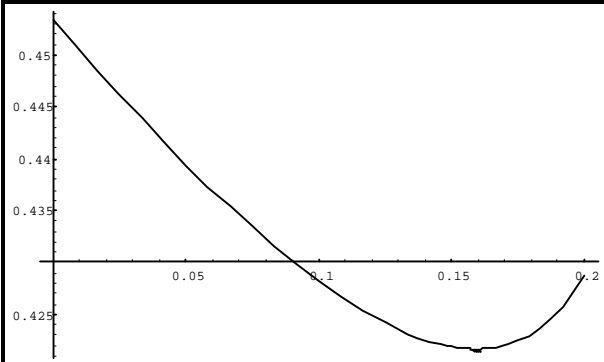
3.B.13. High-Quality Quantity



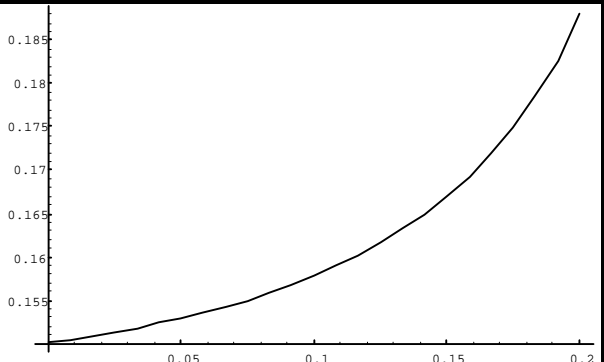
3.B.14. Low-Quality Quantity

Case 4.A. Quality-Dependent Variable Costs
(Foreign High-Quality Firm)

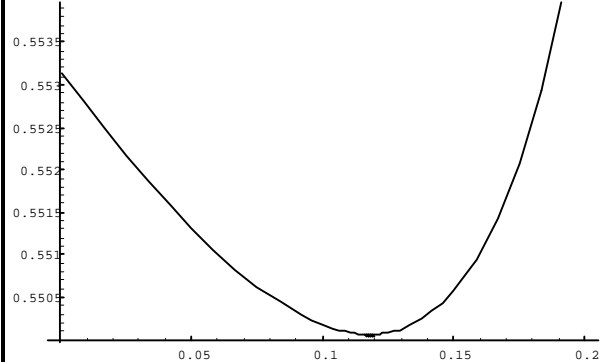




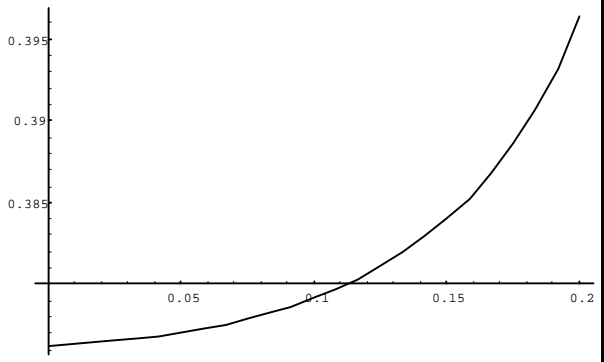
4.A.9. High-Quality Price



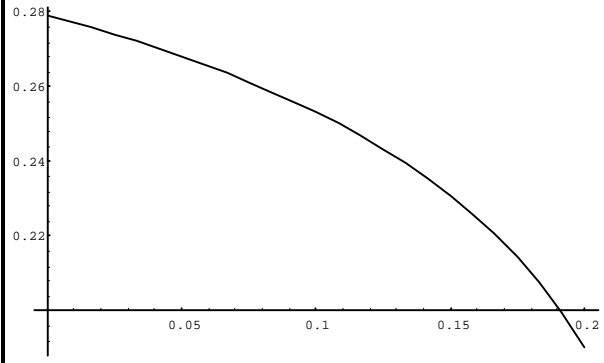
4.A.10. Low-Quality Price



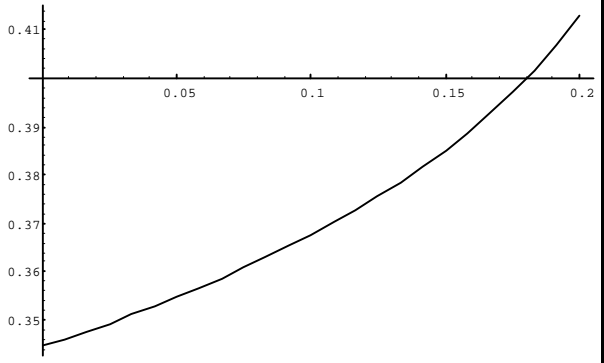
4.A.11. High Price/Quality Ratio



4.A.13. Low Price/Quality Ratio

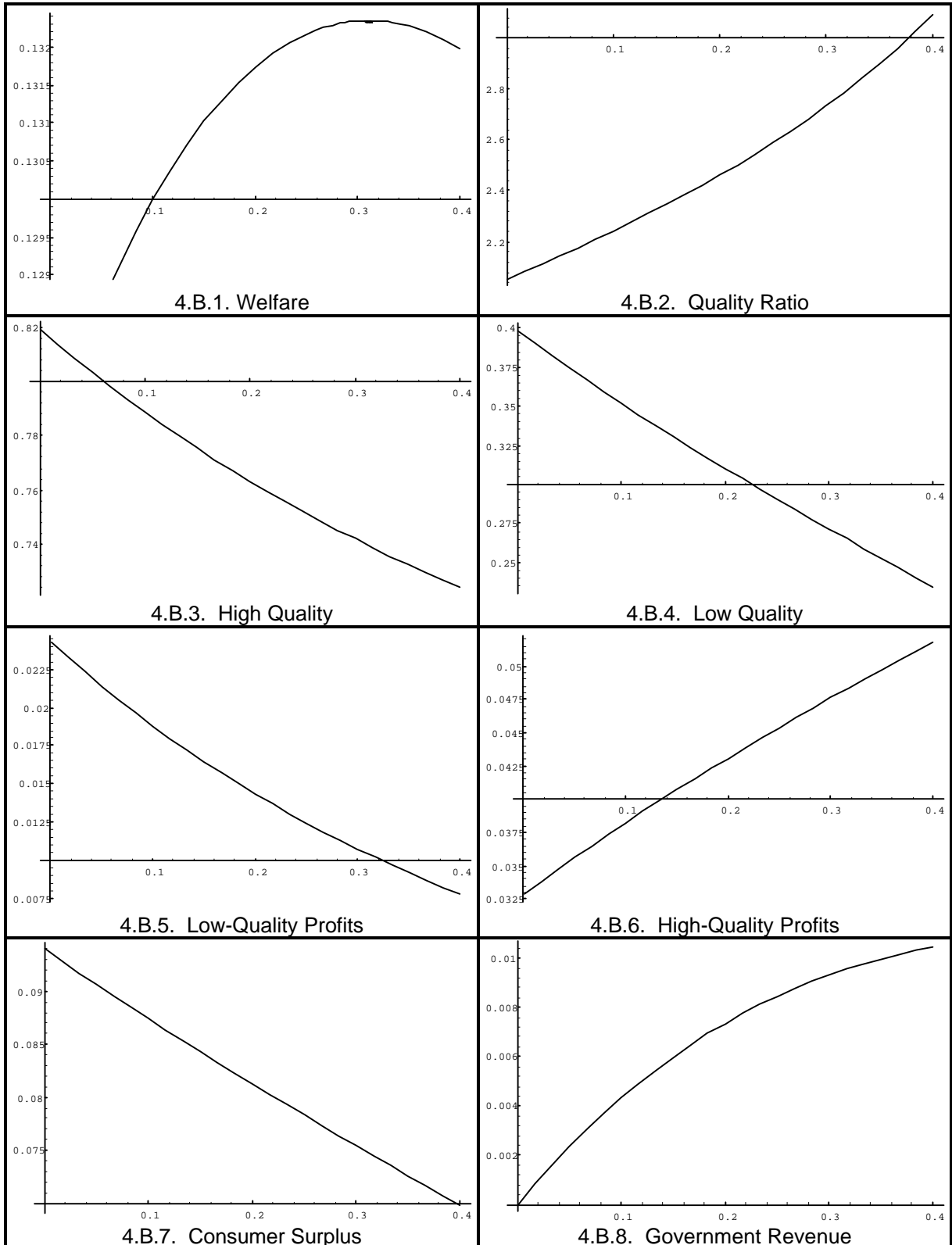


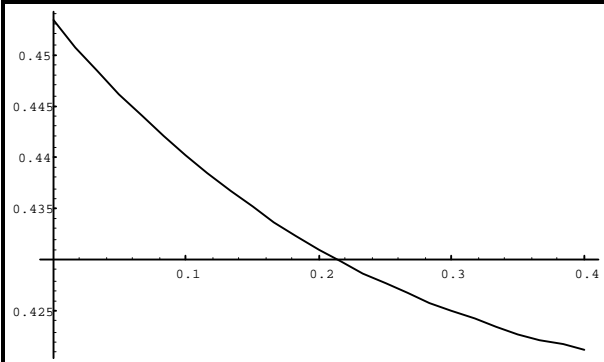
4.A.13. High-Quality Quantity



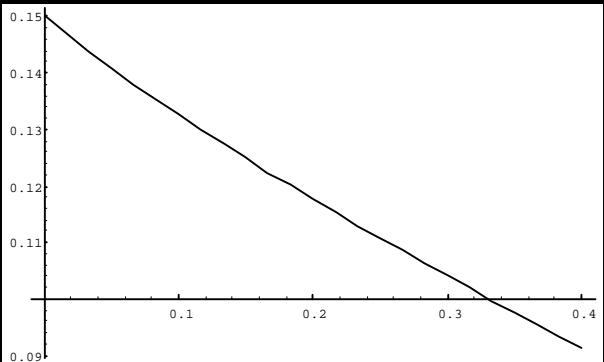
4.A.14. Low-Quality Quantity

Case 4.B. Quality-Dependent Variable Costs
(Foreign Low-Quality Firm)

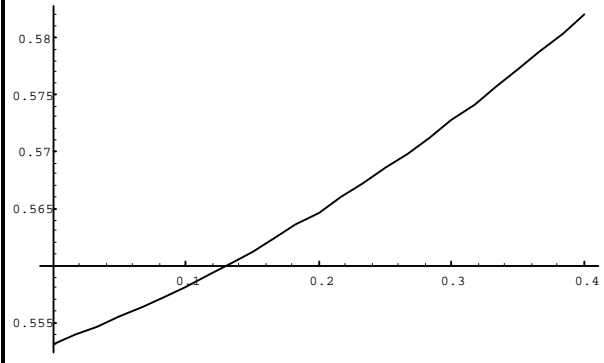




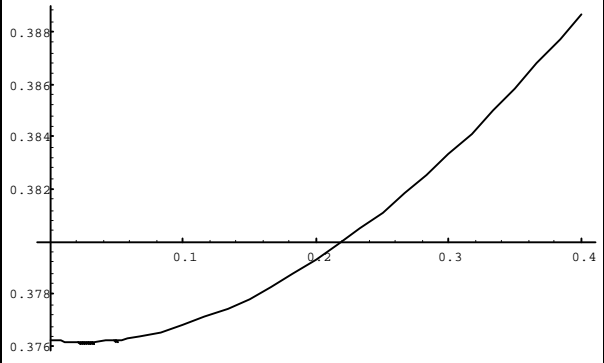
4.B.9. High-Quality Price



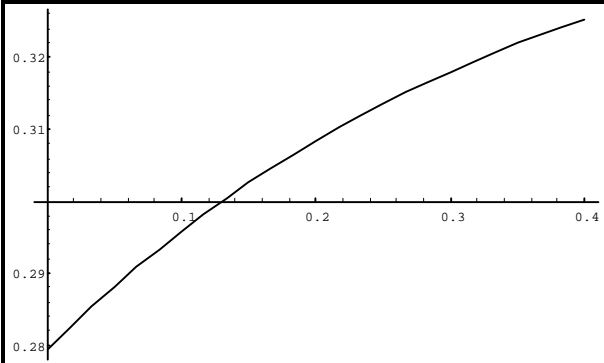
4.B.10. Low-Quality Price



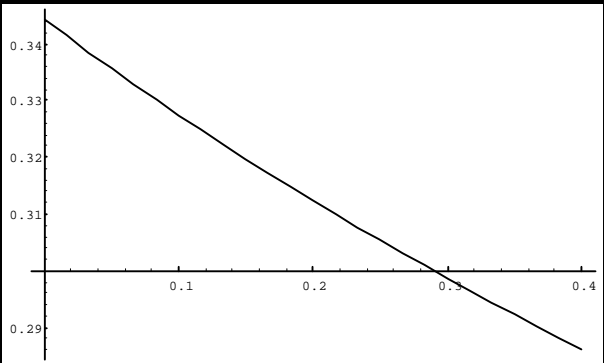
4.B.11. High Price/Quality Ratio



4.B.13. Low Price/Quality Ratio

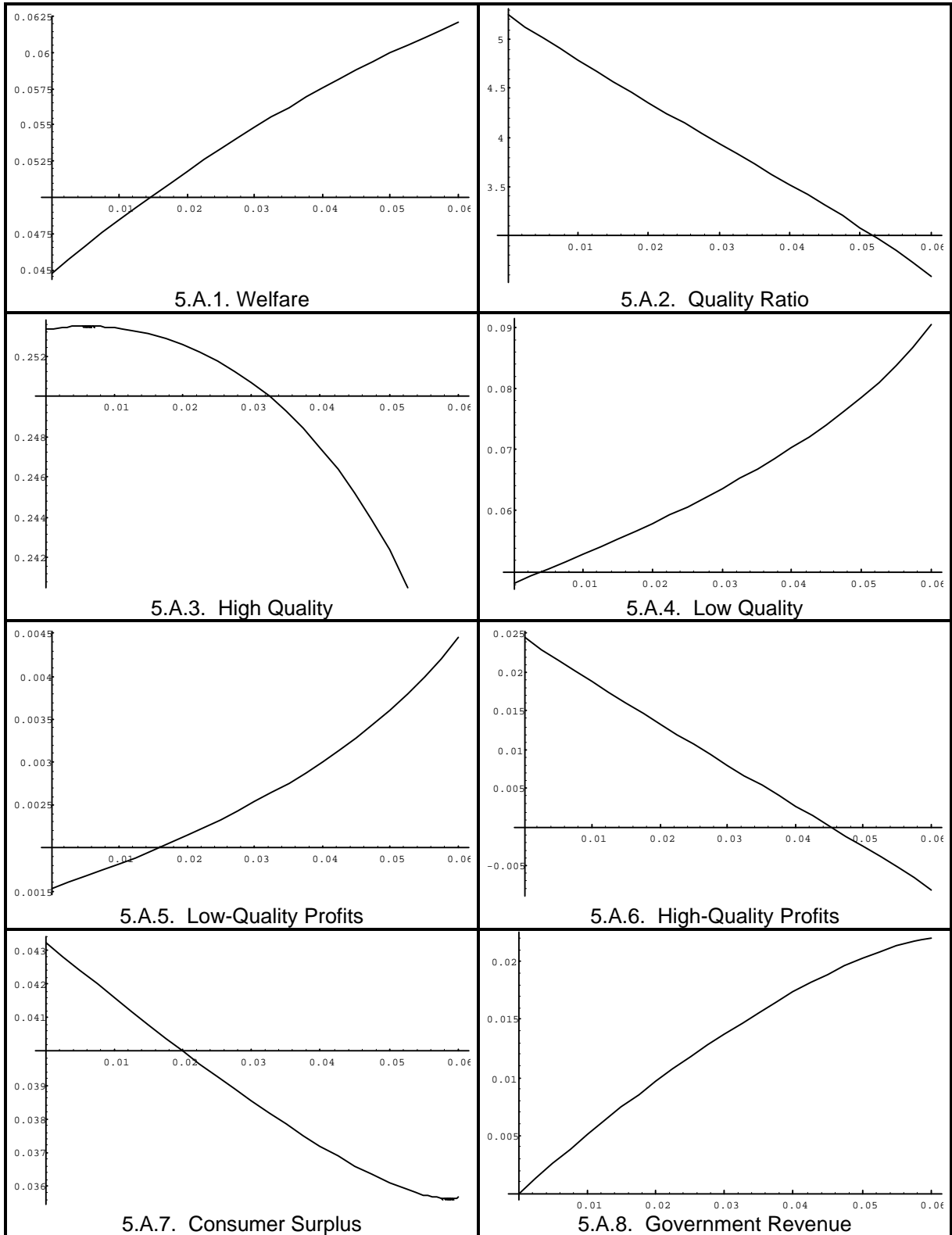


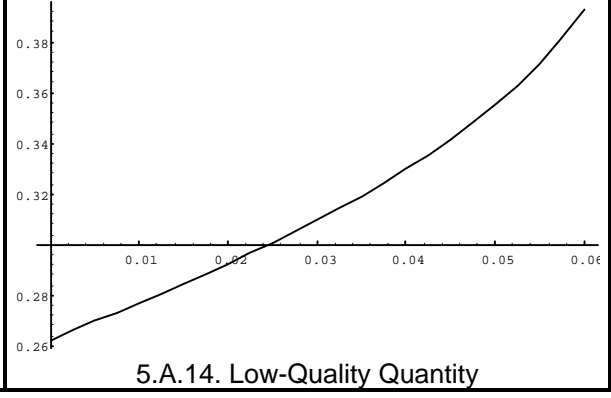
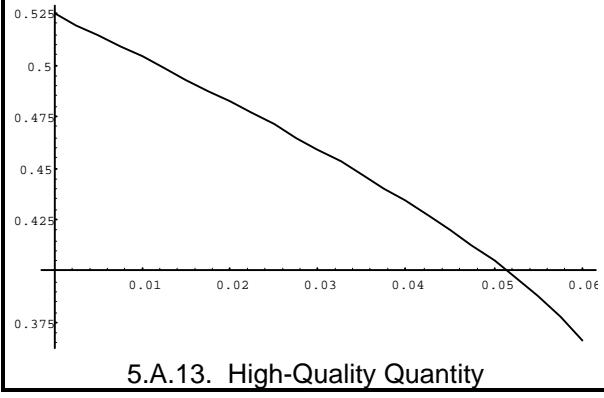
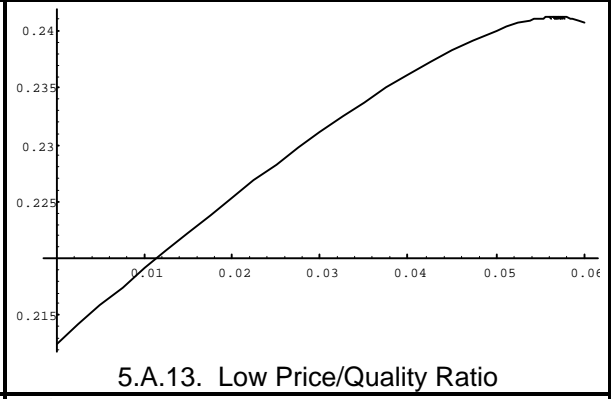
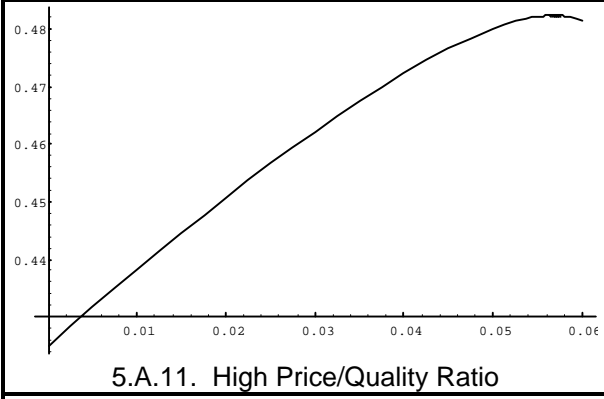
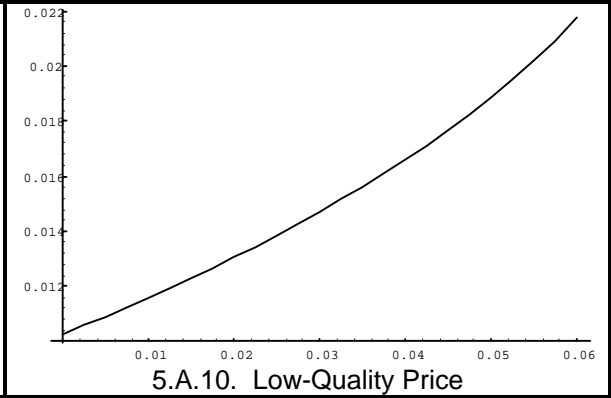
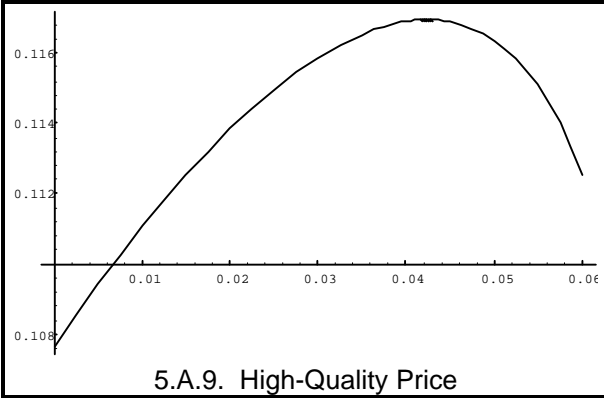
4.B.13. High-Quality Quantity



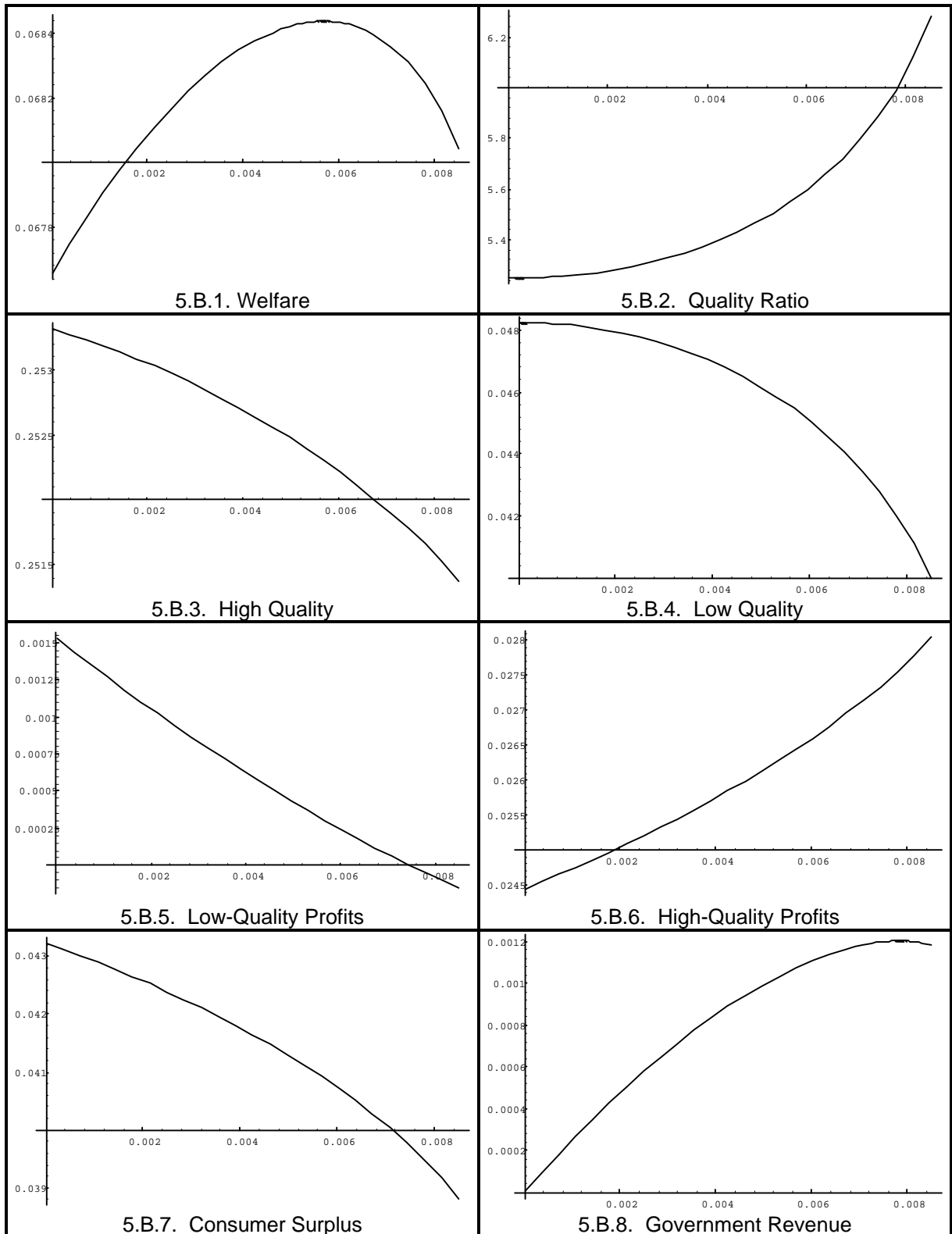
4.B.14. Low-Quality Quantity

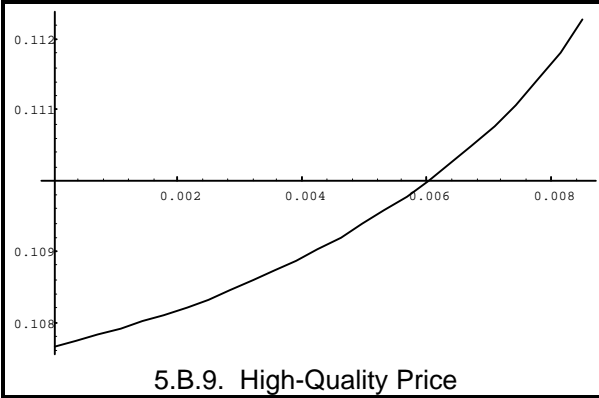
Case 5.A. Specific Tariffs and Quality-Dependent Fixed Costs
(Foreign High-Quality Firm)



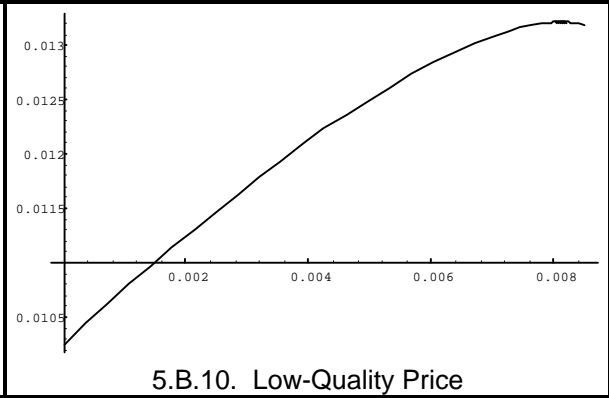


Case 5.B. Specific Tariffs and Quality-Dependent Fixed Costs
(Foreign Low-Quality Firm)

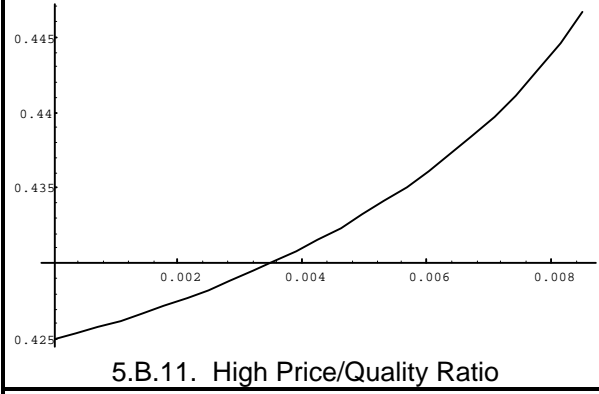




5.B.9. High-Quality Price



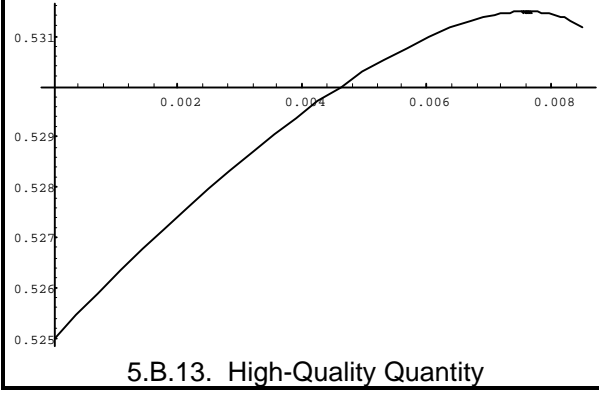
5.B.10. Low-Quality Price



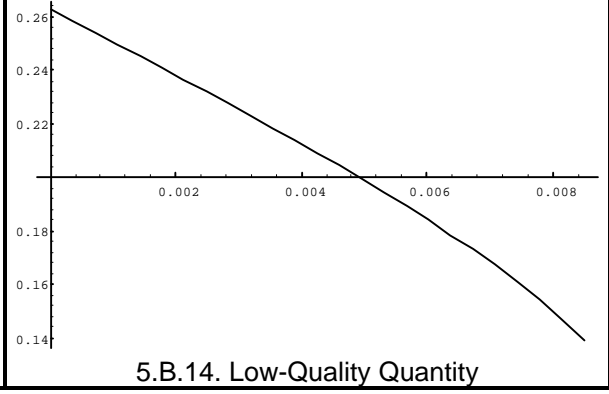
5.B.11. High Price/Quality Ratio



5.B.13. Low Price/Quality Ratio

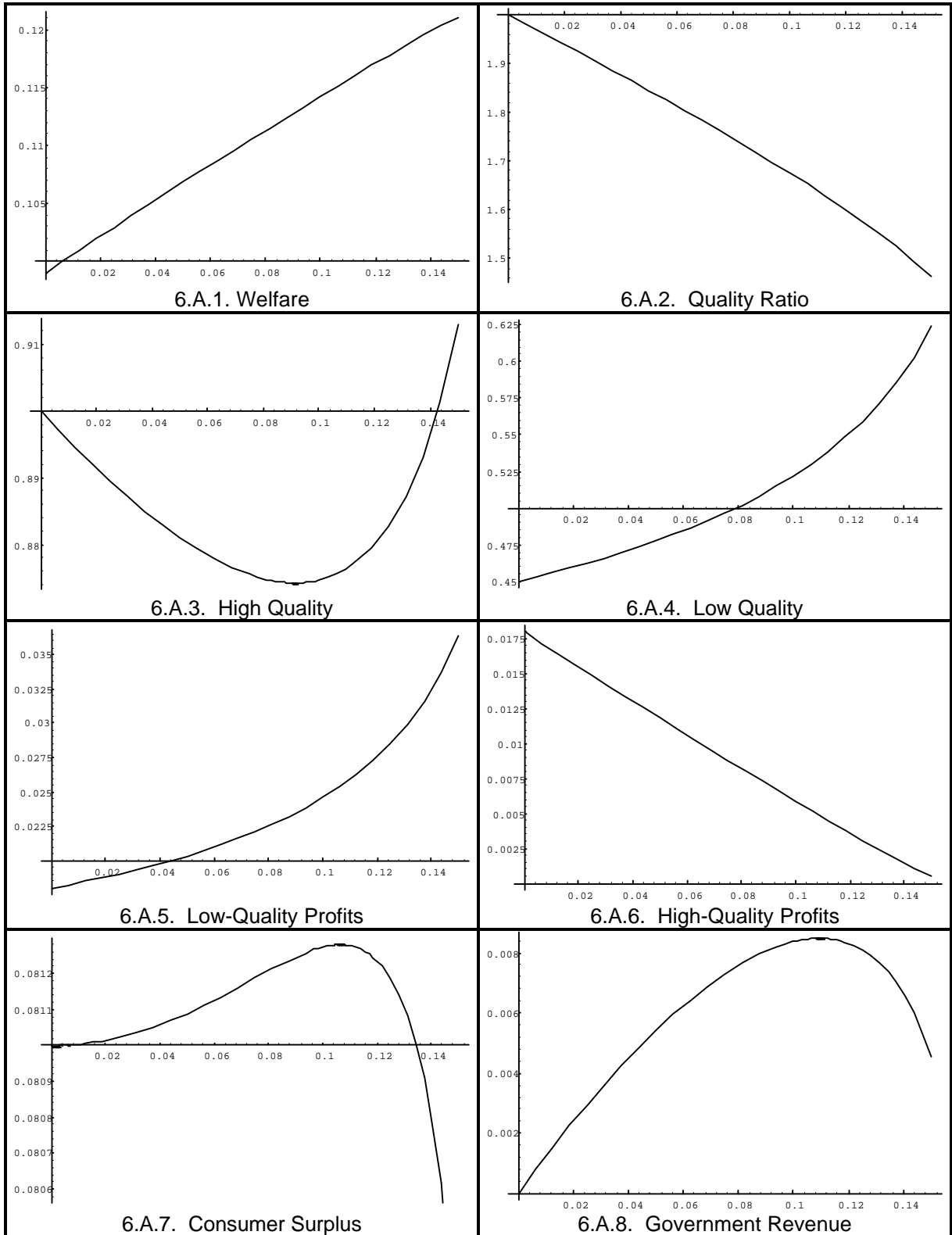


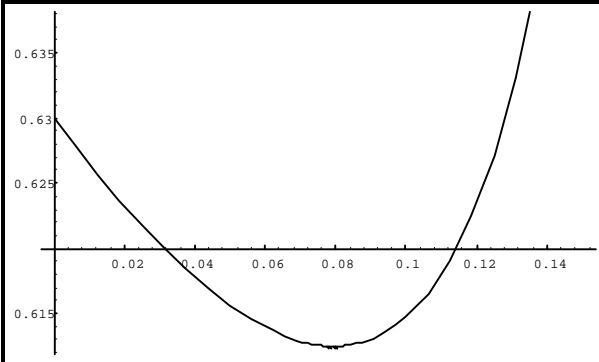
5.B.13. High-Quality Quantity



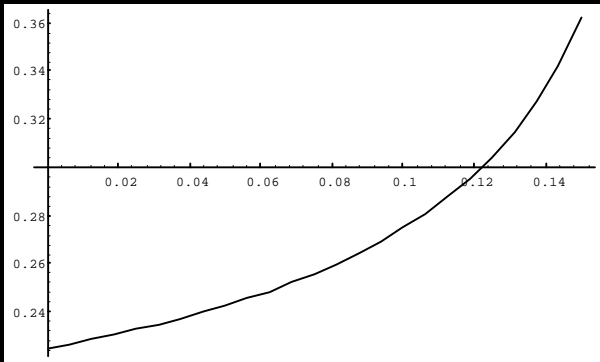
5.B.14. Low-Quality Quantity

Case 6.A. Quality-Dependent Variable Costs / Covered Market
(Foreign High-Quality Firm)

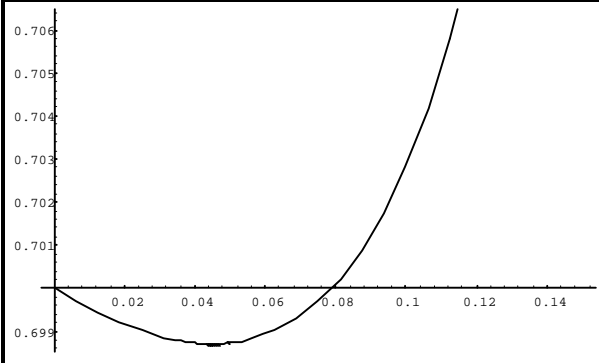




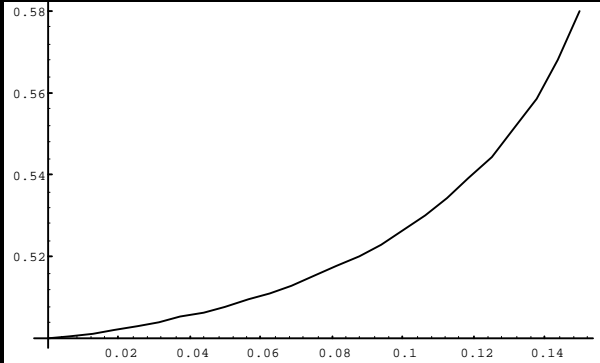
6.A.9. High-Quality Price



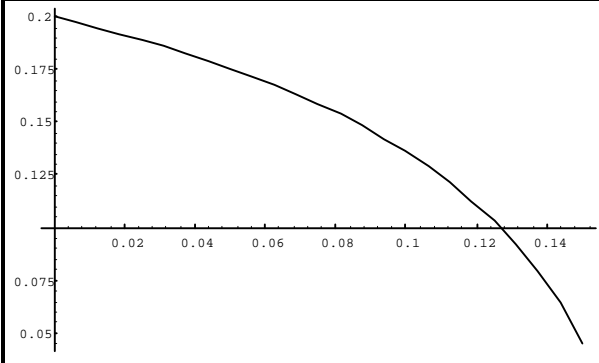
6.A.10. Low-Quality Price



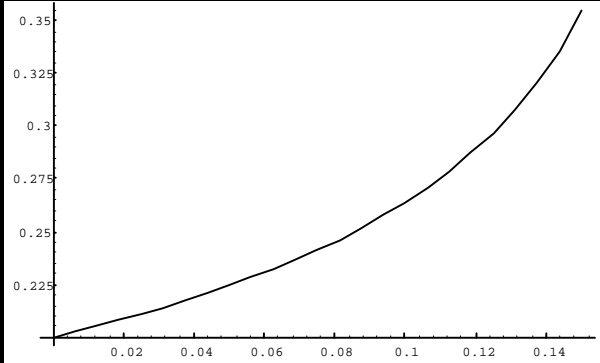
6.A.11. High Price/Quality Ratio



6.A.13. Low Price/Quality Ratio

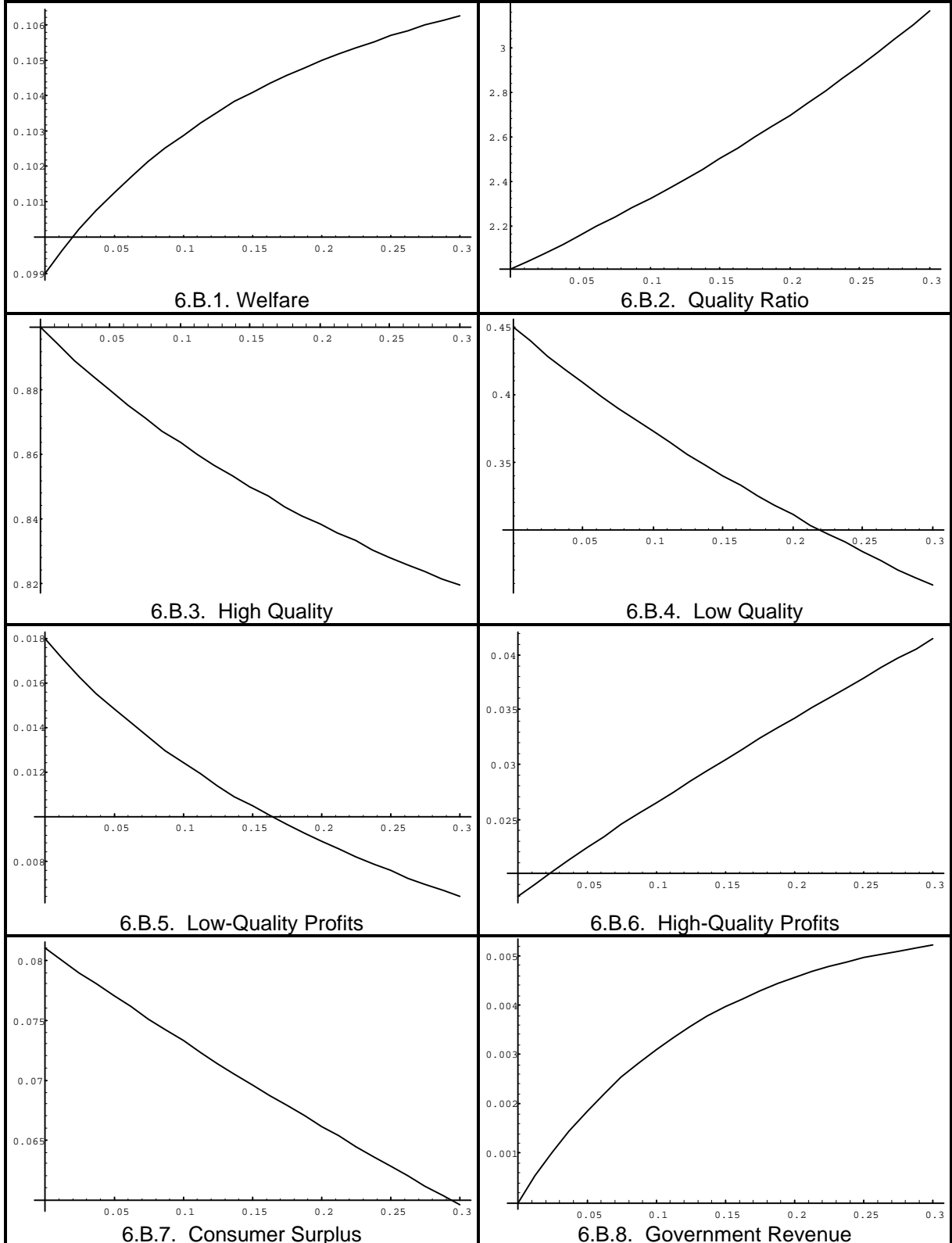


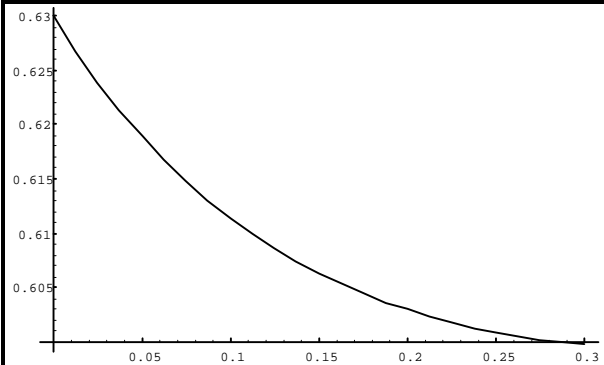
6.A.13. High-Quality Quantity



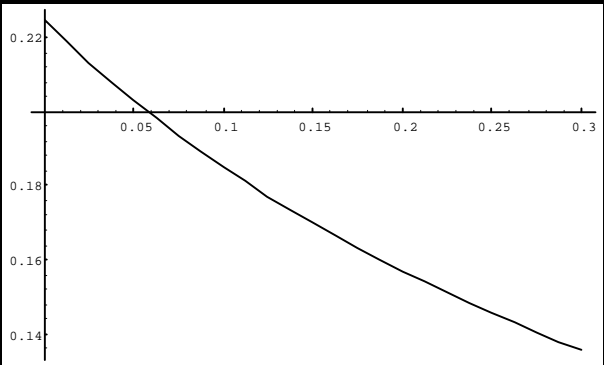
6.A.14. Low-Quality Quantity

Case 6.B. Quality-Dependent Variable Costs / Covered Market
(Foreign Low-Quality Firm)

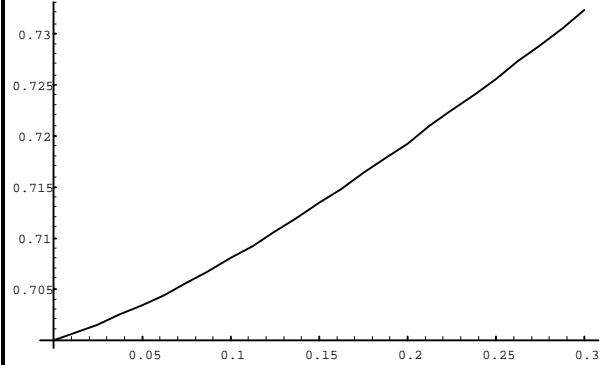




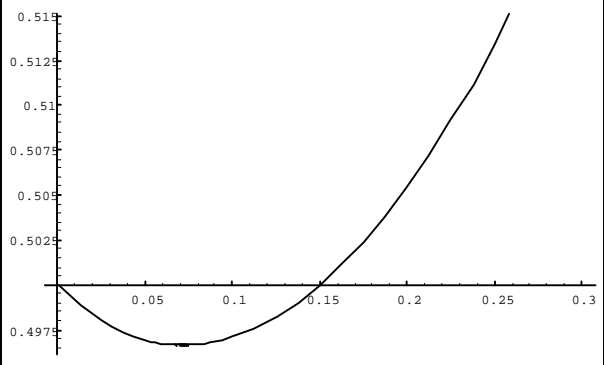
6.B.9. High-Quality Price



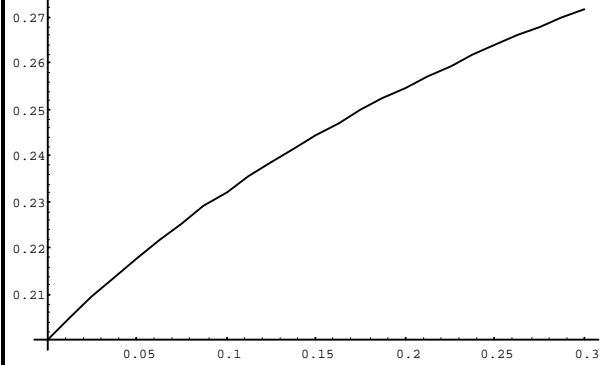
6.B.10. Low-Quality Price



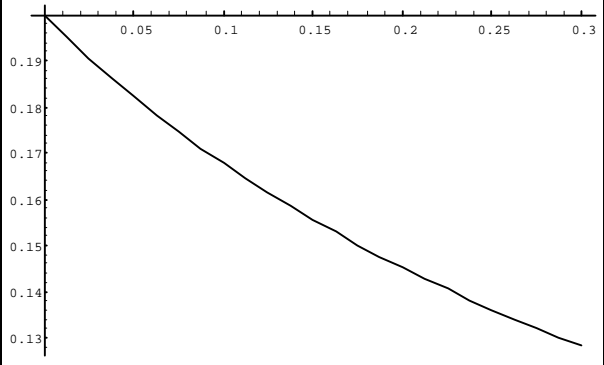
6.B.11. High Price/Quality Ratio



6.B.13. Low Price/Quality Ratio



6.B.13. High-Quality Quantity



6.B.14. Low-Quality Quantity

2008		
B01-08	Euro-Diplomatie durch gemeinsame „Wirtschaftsregierung“	<i>Martin Seidel</i>
2007		
B03-07	Löhne und Steuern im Systemwettbewerb der Mitgliedstaaten der Europäischen Union	<i>Martin Seidel</i>
B02-07	Konsolidierung und Reform der Europäischen Union	<i>Martin Seidel</i>
B01-07	The Ratification of European Treaties - Legal and Constitutional Basis of a European Referendum.	<i>Martin Seidel</i>
2006		
B03-06	Financial Frictions, Capital Reallocation, and Aggregate Fluctuations	<i>Jürgen von Hagen, Haiping Zhang</i>
B02-06	Financial Openness and Macroeconomic Volatility	<i>Jürgen von Hagen, Haiping Zhang</i>
B01-06	A Welfare Analysis of Capital Account Liberalization	<i>Jürgen von Hagen, Haiping Zhang</i>
2005		
B11-05	Das Kompetenz- und Entscheidungssystem des Vertrages von Rom im Wandel seiner Funktion und Verfassung	<i>Martin Seidel</i>
B10-05	Die Schutzklauseln der Beitrittsverträge	<i>Martin Seidel</i>
B09-05	Measuring Tax Burdens in Europe	<i>Guntram B. Wolff</i>
B08-05	Remittances as Investment in the Absence of Altruism	<i>Gabriel González-König</i>
B07-05	Economic Integration in a Multicore World?	<i>Christian Volpe Martinicus, Jennifer Pédussel Wu</i>
B06-05	Banking Sector (Under?)Development in Central and Eastern Europe	<i>Jürgen von Hagen, Valeriya Dinger</i>
B05-05	Regulatory Standards Can Lead to Predation	<i>Stefan Lutz</i>
B04-05	Währungspolitik als Sozialpolitik	<i>Martin Seidel</i>
B03-05	Public Education in an Integrated Europe: Studying to Migrate and Teaching to Stay?	<i>Panu Poutvaara</i>
B02-05	Voice of the Diaspora: An Analysis of Migrant Voting Behavior	<i>Jan Fidrmuc, Orla Doyle</i>
B01-05	Macroeconomic Adjustment in the New EU Member States	<i>Jürgen von Hagen, Iulia Traistaru</i>
2004		
B33-04	The Effects of Transition and Political Instability On Foreign Direct Investment Inflows: Central Europe and the Balkans	<i>Josef C. Brada, Ali M. Kutan, Tanner M. Yigit</i>
B32-04	The Choice of Exchange Rate Regimes in Developing Countries: A Multinomial Panel Analysis	<i>Jürgen von Hagen, Jizhong Zhou</i>
B31-04	Fear of Floating and Fear of Pegging: An Empirical Analysis of De Facto Exchange Rate Regimes in Developing Countries	<i>Jürgen von Hagen, Jizhong Zhou</i>
B30-04	Der Vollzug von Gemeinschaftsrecht über die Mitgliedstaaten und seine Rolle für die EU und den Beitrittsprozess	<i>Martin Seidel</i>
B29-04	Deutschlands Wirtschaft, seine Schulden und die Unzulänglichkeiten der einheitlichen Geldpolitik im Eurosystem	<i>Dieter Spethmann, Otto Steiger</i>
B28-04	Fiscal Crises in U.S. Cities: Structural and Non-structural Causes	<i>Guntram B. Wolff</i>
B27-04	Firm Performance and Privatization in Ukraine	<i>Galyna Grygorenko, Stefan Lutz</i>
B26-04	Analyzing Trade Opening in Ukraine: Effects of a Customs Union with the EU	<i>Oksana Harbuzyuk, Stefan Lutz</i>
B25-04	Exchange Rate Risk and Convergence to the Euro	<i>Lucjan T. Orlowski</i>
B24-04	The Endogeneity of Money and the Eurosystem	<i>Otto Steiger</i>
B23-04	Which Lender of Last Resort for the Eurosystem?	<i>Otto Steiger</i>
B22-04	Non-Discretionary Monetary Policy: The Answer for Transition Economies?	<i>Elham-Mafi Kreft, Steven F. Kreft</i>
B21-04	The Effectiveness of Subsidies Revisited: Accounting for Wage and Employment Effects in Business R+D	<i>Volker Reinthaler, Guntram B. Wolff</i>
B20-04	Money Market Pressure and the Determinants of Banking Crises	<i>Jürgen von Hagen, Tai-kuang Ho</i>
B19-04	Die Stellung der Europäischen Zentralbank nach dem Verfassungsvertrag	<i>Martin Seidel</i>

B18-04	Transmission Channels of Business Cycles Synchronization in an Enlarged EMU	<i>Iulia Traistaru</i>
B17-04	Foreign Exchange Regime, the Real Exchange Rate and Current Account Sustainability: The Case of Turkey	<i>Sübidey Togan, Hasan Ersel</i>
B16-04	Does It Matter Where Immigrants Work? Traded Goods, Non-traded Goods, and Sector Specific Employment	<i>Harry P. Bowen, Jennifer Pédussel Wu</i>
B15-04	Do Economic Integration and Fiscal Competition Help to Explain Local Patterns?	<i>Christian Volpe Martincus</i>
B14-04	Euro Adoption and Maastricht Criteria: Rules or Discretion?	<i>Jiri Jonas</i>
B13-04	The Role of Electoral and Party Systems in the Development of Fiscal Institutions in the Central and Eastern European Countries	<i>Sami Yläoutinen</i>
B12-04	Measuring and Explaining Levels of Regional Economic Integration	<i>Jennifer Pédussel Wu</i>
B11-04	Economic Integration and Location of Manufacturing Activities: Evidence from MERCOSUR	<i>Pablo Sanguinetti, Iulia Traistaru, Christian Volpe Martincus</i>
B10-04	Economic Integration and Industry Location in Transition Countries	<i>Laura Resmini</i>
B09-04	Testing Creditor Moral Hazard in Sovereign Bond Markets: A Unified Theoretical Approach and Empirical Evidence	<i>Ayse Y. Evrensel, Ali M. Kutan</i>
B08-04	European Integration, Productivity Growth and Real Convergence	<i>Taner M. Yigit, Ali M. Kutan</i>
B07-04	The Contribution of Income, Social Capital, and Institutions to Human Well-being in Africa	<i>Mina Balamoune-Lutz, Stefan H. Lutz</i>
B06-04	Rural Urban Inequality in Africa: A Panel Study of the Effects of Trade Liberalization and Financial Deepening	<i>Mina Balamoune-Lutz, Stefan H. Lutz</i>
B05-04	Money Rules for the Eurozone Candidate Countries	<i>Lucjan T. Orłowski</i>
B04-04	Who is in Favor of Enlargement? Determinants of Support for EU Membership in the Candidate Countries' Referenda	<i>Orla Doyle, Jan Fidrmuc</i>
B03-04	Over- and Underbidding in Central Bank Open Market Operations Conducted as Fixed Rate Tender	<i>Ulrich Bindseil</i>
B02-04	Total Factor Productivity and Economic Freedom Implications for EU Enlargement	<i>Ronald L. Moomaw, Euy Seok Yang</i>
B01-04	Die neuen Schutzklauseln der Artikel 38 und 39 des Beitrittsvertrages: Schutz der alten Mitgliedstaaten vor Störungen durch die neuen Mitgliedstaaten	<i>Martin Seidel</i>
2003		
B29-03	Macroeconomic Implications of Low Inflation in the Euro Area	<i>Jürgen von Hagen, Boris Hofmann</i>
B28-03	The Effects of Transition and Political Instability on Foreign Direct Investment: Central Europe and the Balkans	<i>Josef C. Brada, Ali M. Kutan, Taner M. Yigit</i>
B27-03	The Performance of the Euribor Futures Market: Efficiency and the Impact of ECB Policy Announcements (Electronic Version of International Finance)	<i>Kerstin Bernoth, Juergen von Hagen</i>
B26-03	Sovereign Risk Premia in the European Government Bond Market (überarbeitete Version zum Herunterladen)	<i>Kerstin Bernoth, Juergen von Hagen, Ludger Schulknecht</i>
B25-03	How Flexible are Wages in EU Accession Countries?	<i>Anna Iara, Iulia Traistaru</i>
B24-03	Monetary Policy Reaction Functions: ECB versus Bundesbank	<i>Bernd Hayo, Boris Hofmann</i>
B23-03	Economic Integration and Manufacturing Concentration Patterns: Evidence from Mercosur	<i>Iulia Traistaru, Christian Volpe Martincus</i>
B22-03	Reformzwänge innerhalb der EU angesichts der Osterweiterung	<i>Martin Seidel</i>
B21-03	Reputation Flows: Contractual Disputes and the Channels for Inter-Firm Communication	<i>William Pyle</i>
B20-03	Urban Primacy, Gigantism, and International Trade: Evidence from Asia and the Americas	<i>Ronald L. Moomaw, Mohammed A. Alwosabi</i>
B19-03	An Empirical Analysis of Competing Explanations of Urban Primacy Evidence from Asia and the Americas	<i>Ronald L. Moomaw, Mohammed A. Alwosabi</i>

B18-03	The Effects of Regional and Industry-Wide FDI Spillovers on Export of Ukrainian Firms	<i>Stefan H. Lutz, Oleksandr Talavera, Sang-Min Park</i>
B17-03	Determinants of Inter-Regional Migration in the Baltic States	<i>Mihails Hazans</i>
B16-03	South-East Europe: Economic Performance, Perspectives, and Policy Challenges	<i>Iulia Traistaru, Jürgen von Hagen</i>
B15-03	Employed and Unemployed Search: The Marginal Willingness to Pay for Attributes in Lithuania, the US and the Netherlands	<i>Jos van Ommeren, Mihails Hazans</i>
B14-03	FCIs and Economic Activity: Some International Evidence	<i>Charles Goodhart, Boris Hofmann</i>
B13-03	The IS Curve and the Transmission of Monetary Policy: Is there a Puzzle?	<i>Charles Goodhart, Boris Hofmann</i>
B12-03	What Makes Regions in Eastern Europe Catching Up? The Role of Foreign Investment, Human Resources, and Geography	<i>Gabriele Tondl, Goran Vuksic</i>
B11-03	Die Weisungs- und Herrschaftsmacht der Europäischen Zentralbank im europäischen System der Zentralbanken - eine rechtliche Analyse	<i>Martin Seidel</i>
B10-03	Foreign Direct Investment and Perceptions of Vulnerability to Foreign Exchange Crises: Evidence from Transition Economies	<i>Josef C. Brada, Vladimír Tomsík</i>
B09-03	The European Central Bank and the Eurosystem: An Analysis of the Missing Central Monetary Institution in European Monetary Union	<i>Gunnar Heinsohn, Otto Steiger</i>
B08-03	The Determination of Capital Controls: Which Role Do Exchange Rate Regimes Play?	<i>Jürgen von Hagen, Jizhong Zhou</i>
B07-03	Nach Nizza und Stockholm: Stand des Binnenmarktes und Prioritäten für die Zukunft	<i>Martin Seidel</i>
B06-03	Fiscal Discipline and Growth in Euroland. Experiences with the Stability and Growth Pact	<i>Jürgen von Hagen</i>
B05-03	Reconsidering the Evidence: Are Eurozone Business Cycles Converging?	<i>Michael Massmann, James Mitchell</i>
B04-03	Do Ukrainian Firms Benefit from FDI?	<i>Stefan H. Lutz, Oleksandr Talavera</i>
B03-03	Europäische Steuerkoordination und die Schweiz	<i>Stefan H. Lutz</i>
B02-03	Commuting in the Baltic States: Patterns, Determinants, and Gains	<i>Mihails Hazans</i>
B01-03	Die Wirtschafts- und Währungsunion im rechtlichen und politischen Gefüge der Europäischen Union	<i>Martin Seidel</i>
2002		
B30-02	An Adverse Selection Model of Optimal Unemployment Assurance	<i>Marcus Hagedorn, Ashok Kaul, Tim Mennel</i>
B29B-02	Trade Agreements as Self-protection	<i>Jennifer Pédussel Wu</i>
B29A-02	Growth and Business Cycles with Imperfect Credit Markets	<i>Debajyoti Chakrabarty</i>
B28-02	Inequality, Politics and Economic Growth	<i>Debajyoti Chakrabarty</i>
B27-02	Poverty Traps and Growth in a Model of Endogenous Time Preference	<i>Debajyoti Chakrabarty</i>
B26-02	Monetary Convergence and Risk Premiums in the EU Candidate Countries	<i>Lucjan T. Orłowski</i>
B25-02	Trade Policy: Institutional Vs. Economic Factors	<i>Stefan Lutz</i>
B24-02	The Effects of Quotas on Vertical Intra-industry Trade	<i>Stefan Lutz</i>
B23-02	Legal Aspects of European Economic and Monetary Union	<i>Martin Seidel</i>
B22-02	Der Staat als Lender of Last Resort - oder: Die Achillesverse des Eurosystems	<i>Otto Steiger</i>
B21-02	Nominal and Real Stochastic Convergence Within the Transition Economies and to the European Union: Evidence from Panel Data	<i>Ali M. Kutan, Taner M. Yigit</i>
B20-02	The Impact of News, Oil Prices, and International Spillovers on Russian Financial Markets	<i>Bernd Hayo, Ali M. Kutan</i>

B19-02	East Germany: Transition with Unification, Experiments and Experiences	<i>Jürgen von Hagen, Rolf R. Strauch, Guntram B. Wolff</i>
B18-02	Regional Specialization and Employment Dynamics in Transition Countries	<i>Iulia Traistaru, Guntram B. Wolff</i>
B17-02	Specialization and Growth Patterns in Border Regions of Accession Countries	<i>Laura Resmini</i>
B16-02	Regional Specialization and Concentration of Industrial Activity in Accession Countries	<i>Iulia Traistaru, Peter Nijkamp, Simonetta Longhi</i>
B15-02	Does Broad Money Matter for Interest Rate Policy?	<i>Matthias Brückner, Andreas Schaber</i>
B14-02	The Long and Short of It: Global Liberalization, Poverty and Inequality	<i>Christian E. Weller, Adam Hersch</i>
B13-02	De Facto and Official Exchange Rate Regimes in Transition Economies	<i>Jürgen von Hagen, Jizhong Zhou</i>
B12-02	Argentina: The Anatomy of A Crisis	<i>Jiri Jonas</i>
B11-02	The Eurosystem and the Art of Central Banking	<i>Gunnar Heinsohn, Otto Steiger</i>
B10-02	National Origins of European Law: Towards an Autonomous System of European Law?	<i>Martin Seidel</i>
B09-02	Monetary Policy in the Euro Area - Lessons from the First Years	<i>Volker Clausen, Bernd Hayo</i>
B08-02	Has the Link Between the Spot and Forward Exchange Rates Broken Down? Evidence From Rolling Cointegration Tests	<i>Ali M. Kutan, Su Zhou</i>
B07-02	Perspektiven der Erweiterung der Europäischen Union	<i>Martin Seidel</i>
B06-02	Is There Asymmetry in Forward Exchange Rate Bias? Multi-Country Evidence	<i>Su Zhou, Ali M. Kutan</i>
B05-02	Real and Monetary Convergence Within the European Union and Between the European Union and Candidate Countries: A Rolling Cointegration Approach	<i>Josef C. Brada, Ali M. Kutan, Su Zhou</i>
B04-02	Asymmetric Monetary Policy Effects in EMU	<i>Volker Clausen, Bernd Hayo</i>
B03-02	The Choice of Exchange Rate Regimes: An Empirical Analysis for Transition Economies	<i>Jürgen von Hagen, Jizhong Zhou</i>
B02-02	The Euro System and the Federal Reserve System Compared: Facts and Challenges	<i>Karlheinz Ruckriegel, Franz Seitz</i>
B01-02	Does Inflation Targeting Matter?	<i>Manfred J. M. Neumann, Jürgen von Hagen</i>
2001		
B29-01	Is Kazakhstan Vulnerable to the Dutch Disease?	<i>Karlygash Kuralbayeva, Ali M. Kutan, Michael L. Wyzan</i>
B28-01	Political Economy of the Nice Treaty: Rebalancing the EU Council. The Future of European Agricultural Policies	<i>Deutsch-Französisches Wirtschaftspolitisches Forum</i>
B27-01	Investor Panic, IMF Actions, and Emerging Stock Market Returns and Volatility: A Panel Investigation	<i>Bernd Hayo, Ali M. Kutan</i>
B26-01	Regional Effects of Terrorism on Tourism: Evidence from Three Mediterranean Countries	<i>Konstantinos Drakos, Ali M. Kutan</i>
B25-01	Monetary Convergence of the EU Candidates to the Euro: A Theoretical Framework and Policy Implications	<i>Lucjan T. Orłowski</i>
B24-01	Disintegration and Trade	<i>Jarko and Jan Fidrmuc</i>
B23-01	Migration and Adjustment to Shocks in Transition Economies	<i>Jan Fidrmuc</i>
B22-01	Strategic Delegation and International Capital Taxation	<i>Matthias Brückner</i>
B21-01	Balkan and Mediterranean Candidates for European Union Membership: The Convergence of Their Monetary Policy With That of the European Central Bank	<i>Josef C. Brada, Ali M. Kutan</i>
B20-01	An Empirical Inquiry of the Efficiency of Intergovernmental Transfers for Water Projects Based on the WRDA Data	<i>Anna Rubinchik-Pessach</i>
B19-01	Detrending and the Money-Output Link: International Evidence	<i>R.W. Hafer, Ali M. Kutan</i>

B18-01	Monetary Policy in Unknown Territory. The European Central Bank in the Early Years	<i>Jürgen von Hagen, Matthias Brückner</i>
B17-01	Executive Authority, the Personal Vote, and Budget Discipline in Latin American and Caribbean Countries	<i>Mark Hallerberg, Patrick Marier</i>
B16-01	Sources of Inflation and Output Fluctuations in Poland and Hungary: Implications for Full Membership in the European Union	<i>Selahattin Dibooglu, Ali M. Kutan</i>
B15-01	Programs Without Alternative: Public Pensions in the OECD	<i>Christian E. Weller</i>
B14-01	Formal Fiscal Restraints and Budget Processes As Solutions to a Deficit and Spending Bias in Public Finances - U.S. Experience and Possible Lessons for EMU	<i>Rolf R. Strauch, Jürgen von Hagen</i>
B13-01	German Public Finances: Recent Experiences and Future Challenges	<i>Jürgen von Hagen, Rolf R. Strauch</i>
B12-01	The Impact of Eastern Enlargement On EU-Labour Markets. Pensions Reform Between Economic and Political Problems	<i>Deutsch-Französisches Wirtschaftspolitisches Forum</i>
B11-01	Inflationary Performance in a Monetary Union With Large Wage Setters	<i>Lilia Cavallar</i>
B10-01	Integration of the Baltic States into the EU and Institutions of Fiscal Convergence: A Critical Evaluation of Key Issues and Empirical Evidence	<i>Ali M. Kutan, Niina Pautola-Mol</i>
B09-01	Democracy in Transition Economies: Grease or Sand in the Wheels of Growth?	<i>Jan Fidrmuc</i>
B08-01	The Functioning of Economic Policy Coordination	<i>Jürgen von Hagen, Susanne Mundschenk</i>
B07-01	The Convergence of Monetary Policy Between Candidate Countries and the European Union	<i>Josef C. Brada, Ali M. Kutan</i>
B06-01	Opposites Attract: The Case of Greek and Turkish Financial Markets	<i>Konstantinos Drakos, Ali M. Kutan</i>
B05-01	Trade Rules and Global Governance: A Long Term Agenda. The Future of Banking.	<i>Deutsch-Französisches Wirtschaftspolitisches Forum</i>
B04-01	The Determination of Unemployment Benefits	<i>Rafael di Tella, Robert J. McCulloch</i>
B03-01	Preferences Over Inflation and Unemployment: Evidence from Surveys of Happiness	<i>Rafael di Tella, Robert J. McCulloch, Andrew J. Oswald</i>
B02-01	The Konstanz Seminar on Monetary Theory and Policy at Thirty	<i>Michele Fratianni, Jürgen von Hagen</i>
B01-01	Divided Boards: Partisanship Through Delegated Monetary Policy	<i>Etienne Farvaque, Gael Lagadec</i>
2000		
B20-00	Breakin-up a Nation, From the Inside	<i>Etienne Farvaque</i>
B19-00	Income Dynamics and Stability in the Transition Process, general Reflections applied to the Czech Republic	<i>Jens Hölscher</i>
B18-00	Budget Processes: Theory and Experimental Evidence	<i>Karl-Martin Ehrhart, Roy Gardner, Jürgen von Hagen, Claudia Keser</i>
B17-00	Rückführung der Landwirtschaftspolitik in die Verantwortung der Mitgliedsstaaten? - Rechts- und Verfassungsfragen des Gemeinschaftsrechts	<i>Martin Seidel</i>
B16-00	The European Central Bank: Independence and Accountability	<i>Christa Randzio-Plath, Tomasso Padoa-Schioppa</i>
B15-00	Regional Risk Sharing and Redistribution in the German Federation	<i>Jürgen von Hagen, Ralf Hepp</i>
B14-00	Sources of Real Exchange Rate Fluctuations in Transition Economies: The Case of Poland and Hungary	<i>Selahattin Dibooglu, Ali M. Kutan</i>
B13-00	Back to the Future: The Growth Prospects of Transition Economies Reconsidered	<i>Nauro F. Campos</i>

B12-00	Rechtsetzung und Rechtsangleichung als Folge der Einheitlichen Europäischen Wahrung	<i>Martin Seidel</i>
B11-00	A Dynamic Approach to Inflation Targeting in Transition Economies	<i>Lucjan T. Orłowski</i>
B10-00	The Importance of Domestic Political Institutions: Why and How Belgium Qualified for EMU	<i>Marc Hallerberg</i>
B09-00	Rational Institutions Yield Hysteresis	<i>Rafael Di Tella, Robert MacCulloch</i>
B08-00	The Effectiveness of Self-Protection Policies for Safeguarding Emerging Market Economies from Crises	<i>Kenneth Kletzer</i>
B07-00	Financial Supervision and Policy Coordination in The EMU	<i>Deutsch-Franzosisches Wirtschaftspolitisches Forum</i>
B06-00	The Demand for Money in Austria	<i>Bernd Hayo</i>
B05-00	Liberalization, Democracy and Economic Performance during Transition	<i>Jan Fidrmuc</i>
B04-00	A New Political Culture in The EU - Democratic Accountability of the ECB	<i>Christa Randzio-Plath</i>
B03-00	Integration, Disintegration and Trade in Europe: Evolution of Trade Relations during the 1990's	<i>Jarko Fidrmuc, Jan Fidrmuc</i>
B02-00	Inflation Bias and Productivity Shocks in Transition Economies: The Case of the Czech Republic	<i>Josef C. Brada, Arthur E. King, Ali M. Kutan</i>
B01-00	Monetary Union and Fiscal Federalism	<i>Kenneth Kletzer, Jurgen von Hagen</i>
1999		
B26-99	Skills, Labour Costs, and Vertically Differentiated Industries: A General Equilibrium Analysis	<i>Stefan Lutz, Alessandro Turrini</i>
B25-99	Micro and Macro Determinants of Public Support for Market Reforms in Eastern Europe	<i>Bernd Hayo</i>
B24-99	What Makes a Revolution?	<i>Robert MacCulloch</i>
B23-99	Informal Family Insurance and the Design of the Welfare State	<i>Rafael Di Tella, Robert MacCulloch</i>
B22-99	Partisan Social Happiness	<i>Rafael Di Tella, Robert MacCulloch</i>
B21-99	The End of Moderate Inflation in Three Transition Economies?	<i>Josef C. Brada, Ali M. Kutan</i>
B20-99	Subnational Government Bailouts in Germany	<i>Helmut Seitz</i>
B19-99	The Evolution of Monetary Policy in Transition Economies	<i>Ali M. Kutan, Josef C. Brada</i>
B18-99	Why are Eastern Europe's Banks not failing when everybody else's are?	<i>Christian E. Weller, Bernard Morzuch</i>
B17-99	Stability of Monetary Unions: Lessons from the Break-Up of Czechoslovakia	<i>Jan Fidrmuc, Julius Horvath and Jarko Fidrmuc</i>
B16-99	Multinational Banks and Development Finance	<i>Christian E. Weller and Mark J. Scher</i>
B15-99	Financial Crises after Financial Liberalization: Exceptional Circumstances or Structural Weakness?	<i>Christian E. Weller</i>
B14-99	Industry Effects of Monetary Policy in Germany	<i>Bernd Hayo and Birgit Uhlenbrock</i>
B13-99	Financial Fragility or What Went Right and What Could Go Wrong in Central European Banking?	<i>Christian E. Weller and Jurgen von Hagen</i>
B12-99	Size Distortions of Tests of the Null Hypothesis of Stationarity: Evidence and Implications for Applied Work	<i>Mehmet Caner and Lutz Kilian</i>
B11-99	Financial Supervision and Policy Coordination in the EMU	<i>Deutsch-Franzosisches Wirtschaftspolitisches Forum</i>
B10-99	Financial Liberalization, Multinational Banks and Credit Supply: The Case of Poland	<i>Christian Weller</i>
B09-99	Monetary Policy, Parameter Uncertainty and Optimal Learning	<i>Volker Wieland</i>
B08-99	The Connection between more Multinational Banks and less Real Credit in Transition Economies	<i>Christian Weller</i>

- B07-99 **Comovement and Catch-up in Productivity across Sectors: Evidence from the OECD** *Christopher M. Cornwell and Jens-Uwe Wächter*
- B06-99 **Productivity Convergence and Economic Growth: A Frontier Production Function Approach** *Christopher M. Cornwell and Jens-Uwe Wächter*
- B05-99 **Tumbling Giant: Germany's Experience with the Maastricht Fiscal Criteria** *Jürgen von Hagen and Rolf Strauch*
- B04-99 **The Finance-Investment Link in a Transition Economy: Evidence for Poland from Panel Data** *Christian Weller*
- B03-99 **The Macroeconomics of Happiness** *Rafael Di Tella, Robert McCulloch and Andrew J. Oswald*
- B02-99 **The Consequences of Labour Market Flexibility: Panel Evidence Based on Survey Data** *Rafael Di Tella and Robert McCulloch*
- B01-99 **The Excess Volatility of Foreign Exchange Rates: Statistical Puzzle or Theoretical Artifact?** *Robert B.H. Hauswald*
- 1998**
- B16-98 **Labour Market + Tax Policy in the EMU** *Deutsch-Französisches Wirtschaftspolitisches Forum*
- B15-98 **Can Taxing Foreign Competition Harm the Domestic Industry?** *Stefan Lutz*
- B14-98 **Free Trade and Arms Races: Some Thoughts Regarding EU-Russian Trade** *Rafael Reuveny and John Maxwell*
- B13-98 **Fiscal Policy and Intranational Risk-Sharing** *Jürgen von Hagen*
- B12-98 **Price Stability and Monetary Policy Effectiveness when Nominal Interest Rates are Bounded at Zero** *Athanasios Orphanides and Volker Wieland*
- B11A-98 **Die Bewertung der "dauerhaft tragbaren öffentlichen Finanzlage" der EU Mitgliedstaaten beim Übergang zur dritten Stufe der EWWU** *Rolf Strauch*
- B11-98 **Exchange Rate Regimes in the Transition Economies: Case Study of the Czech Republic: 1990-1997** *Julius Horvath and Jiri Jonas*
- B10-98 **Der Wettbewerb der Rechts- und politischen Systeme in der Europäischen Union** *Martin Seidel*
- B09-98 **U.S. Monetary Policy and Monetary Policy and the ESCB** *Robert L. Hetzel*
- B08-98 **Money-Output Granger Causality Revisited: An Empirical Analysis of EU Countries (überarbeitete Version zum Herunterladen)** *Bernd Hayo*
- B07-98 **Designing Voluntary Environmental Agreements in Europe: Some Lessons from the U.S. EPA's 33/50 Program** *John W. Maxwell*
- B06-98 **Monetary Union, Asymmetric Productivity Shocks and Fiscal Insurance: an Analytical Discussion of Welfare Issues** *Kenneth Kletzer*
- B05-98 **Estimating a European Demand for Money (überarbeitete Version zum Herunterladen)** *Bernd Hayo*
- B04-98 **The EMU's Exchange Rate Policy** *Deutsch-Französisches Wirtschaftspolitisches Forum*
- B03-98 **Central Bank Policy in a More Perfect Financial System** *Jürgen von Hagen / Ingo Fender*
- B02-98 **Trade with Low-Wage Countries and Wage Inequality** *Jaleel Ahmad*
- B01-98 **Budgeting Institutions for Aggregate Fiscal Discipline** *Jürgen von Hagen*
- 1997**
- B04-97 **Macroeconomic Stabilization with a Common Currency: Does European Monetary Unification Create a Need for Fiscal Insurance or Federalism?** *Kenneth Kletzer*
- B-03-97 **Liberalising European Markets for Energy and Telecommunications: Some Lessons from the US Electric Utility Industry** *Tom Lyon / John Mayo*
- B02-97 **Employment and EMU** *Deutsch-Französisches Wirtschaftspolitisches Forum*
- B01-97 **A Stability Pact for Europe** *(a Forum organized by ZEI)*

ISSN 1436 - 6053

Zentrum für Europäische Integrationsforschung
Center for European Integration Studies
Rheinische Friedrich-Wilhelms-Universität Bonn

Walter-Flex-Strasse 3
D-53113 Bonn
Germany

Tel.: +49-228-73-1732
Fax: +49-228-73-1809
www.zei.de